QMS® 1060E Print System Reference

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1

Introduction

In This Chapter . . .

- About this manual
- Typographic conventions

Introduction

This manual provides information you may need only once in a while. Use it in conjunction with your other QMS 1060E Print System documentation.

Here's a brief overview of what's included in this manual.

About This Manual

The information in this manual is divided into the following sections:

1	**Introduction**	Provides an overview of the manual.
2	**Print Media**	Lists print media sizes, margins, and imageable areas and provides media storage information.
3	**Professional Printing**	Discusses typographic terms, displays the printer's typefaces, and provides some page design tips.
4	**Printer Configuration**	Explains the methods of configuring the printer, demonstrates how to use the printer control panel, and provides a complete discussion of the configuration menu options including downloading system software to flash memory.
5	**Additional Technical Information**	Discusses memory terms and configuration, end job mode, gamma correction, ESP modes, parallel interface modes, PS Protocol, and HP-GL color encoding.

6	**Printer Options**	Describes how to install and use additional media input sources and a paper feeder; optional fonts; security cards; memory upgrades (SIMMs); network and LocalTalk interfaces; and SCSI or IDE internal hard disks. It also describes how to download an optional emulation.
A	**QMS Customer Support**	Provides world-wide product sales and support telephone numbers and describes how to communicate with QMS through the QMS Bulletin Board, CompuServe, the Internet, and Q-FAX.
B	**Technical Specifications**	Provides technical specifications for the printer, shows cable pinouts, and lists available supplies and replacement parts.
C	**Document Option Commands**	Lists printer-supported Document Option Commands (DOCs) and updated PCL 5 terminology and DOCs.
D	**Notices**	Lists printer-supported Document Option Commands (DOCs).
E	**Configuration Menu**	Provides a menu chart that shows the structural layout of the configuration menu options.
	Glossary	Defines commonly used terms.

Typographic Conventions

The following typographic conventions are used throughout this manual:

`Mixed-Case Courier`	Text you type, and messages and information displayed on the screen
`Mixed-Case Italic Courier`	Variable text you type; replace the italicized word(s) with information specific to your printer or computer
UPPERCASE COURIER	Information displayed in the printer message window
lowercase bold	PostScript operators and DOS commands
lowercase italic	Variable information in text
UPPERCASE	File and utility names
↵	Press the Enter key (PC) or Return key (Macintosh)
^	Press and hold down the Ctrl key (PC)

» **Note:** *Notes contain tips, extra information, or important information that deserves emphasis or reiteration.*

▲ **Caution:** *Cautions present information that you need to know to avoid equipment damage, process failure, or extreme annoyance.*

WARNING! *Warnings indicate the possibility of personal injury if a specific procedure is not performed exactly as described in the manual.*

ACHTUNG! *Bitte halten Sie sich exakt an die im Handbuch beschriebene Vorgehensweise, da sonst Verletzungsgefahr bestehen könnte.*

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2

Print Media

In This Chapter . . .

- Media sizes, imageable areas, and margins
- Media storage

Introduction

This chapter lists the media sizes and imageable areas supported by the QMS 1060E Print System, and then provides information on selecting and storing media.

Media Sizes and Imageable Areas

Your printer supports paper, envelopes, transparencies, and labels in a number of sizes. Each size has a certain imageable area, the maximum area a printer can access, which is limited by the physical media size, the margins required by the printer, and the amount of memory available for the full-page frame buffer.

» **Note:** *The media size must match the cassette size. Since the cassette sends a size signal to the printer controller, using the wrong size media will cause your image to be positioned incorrectly on the page or clipped. You may purchase additional cassettes from your QMS vendor.*

The following table lists the size, imageable area, feed edge (the edge of the media drawn in the printer first), and input source (tray or cassette from which media is accepted) for all supported media. i

Media	Media Size		Imageable Area		Feed Edge	*Input Source
	Inches	Millimeters	Inches	Millimeters		
A4	8.2x11.7	208x297	7.94x11.34	201.68x288.04	Short	M S O
B5 ISO	6.93x9.85	176x250	6.59x9.5	167.39x241.30	Short	M
Executive	7.25x10.5	184x267	6.94x10.17	176.28x258.32	Short	M
Legal	8.5x14.0	216x356	8.19x13.66	208.03x346.96	Short	M S O
Letter	8.5x11.0	216x279	8.16x10.69	207.26x271.53	Short	M S O
Com 9	3.88x8.88	99x226	3.38x8.56	85.85x217.42	Short	M S O
Com 10	4.13x9.50	105x241	3.81x9.19	96.77x233.43	Short	M S O
DL	4.33x8.67	110x220	3.17x7.50	80.52x190.50	Short	M S O
Monarch	3.88x7.50	99x191	2.69x6.32	68.33x160.53	Short	M S O
C5	6.38x9.01	162x229	5.19x7.82	131.83x198.63	Short	M S O
Envelope	3.6 to 6.65 5.86 to 9.43	91 to 169 x 149 to 240	2.4 to 5.7 4.66 to 8.64	60.96 to 144.78 118.36 to 219.46	Short	M S O
Postcard	4.13x5.83	105x149	3.83x5.50	97.28x139.70	Short	M
**Input Source Key: M = Multipurpose Tray; S = Standard Feeder; O = Optional Feeder*						

Working Within the Imageable Area

The imageable areas for print media on your QMS 1060E Print System are not centered vertically on their respective pages and may vary $\frac{1}{16}$" (1.6 mm). You can align the image in several different ways:

- Adjust the margins or page size through your application
- Use the printer's control panel (Administration/Engine/Image Alignment menu)
- Use the PS Executive Series Utilities

- Use the PostScript **translate** and **scale** operators to reduce image size and change its placement on the page.

Setting Page Margins

Margins are set through your application. Some applications allow you to set custom page sizes and margins while others allow only standard page sizes and margins. If you choose a standard format, you may lose part of your image due to imageable area constraints. If you can custom-size your page, use exactly those sizes given for the imageable area.

Media Types and Weights

Paper Type

The printer supports plain paper, recycled paper, letterhead/memo, thick paper, and postcard. Use only paper recommended for laser printers, such as Hammermill Laser Print.

» **Note:** *We do not recommend printing on perforated or 3-hole punched paper.*

Paper Weight

The printer supports plain paper, 16-24 lb (64-90 g/m^2), in cassettes and thick paper, 24-42 lb (90-157 g/m^2), in the manual feed tray.

Envelope Type

The printer supports the following envelopes: Commercial 9, Commercial 10, Monarch, International DL, International C5, and custom envelopes in the multipurpose tray or in an optional envelope cassette.

▲ **Caution:** *The heat of the fuser may seal some envelopes. Test an envelope to make sure it can withstand the fusing temperature before starting a big job.*

Transparency Type

The printer supports transparencies meeting normal photocopier standards, such as 3M PP2500.

» **Note:** *Use only transparencies recommended for laser printers.*

Transparency Weight

The printer supports transparencies up to a weight of 36 lbs (135 g/m^2).

Label Type

Use only labels recommended for laser printers, such as Avery 5260. Adhesive label stock has pressure-sensitive (peel and stick) adhesive backing.

» **Note:** *Always use the multipurpose tray to print labels.*

Label Weight

The printer supports 24-42 lb (90-157 g/m^2) labels.

Storing Media

How you store paper and other media can make a big difference in print quality and printer operation. Improperly stored media increases the chance of jams during printing and can drastically affect the appearance of your work. Keep media in good condition by storing it

- In its wrapper
- On a flat surface
- In a closed cabinet
- In a cool, dry area

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3

Professional Printing

In This Chapter . . .

- About typefaces and fonts
- Typography terms
- Typeface classification
- Resident typefaces, fonts, and symbol sets

Introduction

This chapter displays the printer's resident typefaces, offers suggestions for using them, and includes page design tips. A bibliography for graphic design and desktop publishing can be found at the end of this chapter.

About Typefaces and Fonts

Many of the terms and phrases used in desktop publishing are derived from the language of professional printers and typesetters. This section explains common words and phrases used when discussing typefaces.

Typeface	Typeface Family
A named design of a set of printed characters, such as Times, that has a specified obliqueness (degree of slant) and stroke weight (thickness of stroke). It does not define a particular size.	A group of similar typefaces. For example, the Times typeface family consists of four typefaces: Times Roman, **Times Bold**, *Times Italic*, and ***Times Bold Italic***.
Font	**Character Set**
A set of characters of the same typeface (such as Times), style (such as *italic*), stroke weight (such as **bold**), and point size (such as 10). Although you hear the term "font" used more generally, as if referring to a typeface, it's really a subset of a typeface.	A collection of symbols designed for various printing applications. Many character sets are composed of the letters (uppercase and lowercase A-Z), digits (0-9), and any symbol (such as blank space, dollar sign, and ampersand). Other character sets are composed entirely of symbols.

Typeface Classification

One way of classifying the different typefaces is to group them into the following categories:

Serif

A serif is a decorative line or tail on the ends of the strokes of a letter. Serifs, usually on the lower half of a letter, have also been referred to as feet or curlicues. Courier, ITC Bookman, New Century Schoolbook, Palatino, and Times are serif typefaces. In the example shown, all the letters except “e” and “o” have serifs.

Sans Serif

Sans serif (“sans” is French for “without”) indicates a typeface without any of these small tails. A sans serif typeface is decorative by the shape and styling of its letters but has less detail than a serif typeface. Helvetica, Helvetica Condensed, Helvetica Narrow, and ITC Avant Garde Gothic are all sans serif typefaces. In the example shown above, the slight curving at the bottom of the letters “t” and “a” is not a serif. It is part of the line forming the letter rather than a decorative line added on.

Script

Script typefaces simulate handwriting or brush lettering. Each letter is connected visually, if not physically. ITC Zapf Chancery is a script typeface.

Pi or Symbol

Pi or symbol typefaces are collections of assorted special-purpose characters (for example, decorative, graphic, math, or monetary characters). They are especially useful for highlighting items in lists, providing graphics, and displaying symbols that might otherwise have to be drawn in by hand. Many typefaces today include a complement of the more commonly used pi characters. Symbol and ITC Zapf Dingbats are pi typefaces.

Σψμβολ

Typography Terms

Monospacing

The terms “monospaced” and “fixed-pitch” refer to a typeface whose characters all have uniform and equal spacing. These typefaces are useful for spreadsheets and other documents with columnar data. Monospacing is the opposite of proportional spacing.

Proportional Spacing

The term “proportionally spaced” refers to a typeface in which the width of each character varies. For example, the letter “i” is thinner than the letter “m” and therefore takes up less space. Proportional spacing saves page space and is easier on the eye. This manual’s text uses the Helvetica font, a proportionally spaced typeface.

alphabet
alphabet

Because proportionally spaced typefaces place each character according to its individual size, they increase legibility and readability. This example shows the difference between a monospaced typeface (Courier) and a typeface (Times).

Bitmapped Font

A bitmapped font is a one in which each character is represented by a set of dot patterns. Each font size requires a different set of dot patterns.

Scalable Font

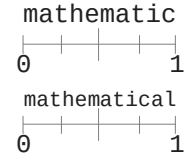
A scalable font is one in which each character's dot pattern (bitmap) is generated from a mathematical representation (or outline) of the character. Scalable fonts eliminate the need to store many different font sizes.

Point Size

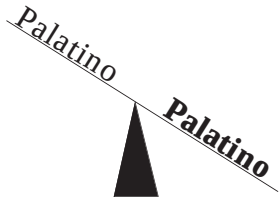
Point size refers to the height of a proportionally spaced typeface. A point is a unit of measure equal to 1/72". Therefore, the larger the point size, the larger the letter. The following example shows characters in 8, 10, 12, 24, and 36 point sizes:

Pitch

Pitch refers to the number of characters per horizontal inch (cpi) in a monospaced typeface. Therefore, the larger the pitch, the smaller the letter. For example, a ten-pitch typeface prints ten characters per inch (or 10 cpi) while a twelve-pitch typeface prints twelve characters per inch (or 12 cpi). The example shows ten-pitch and twelve-pitch Courier.



Stroke Weight



Stoke weight (light/medium/bold) is the width (thickness), of the lines (strokes) that make up a character. The example at left shows the medium and bold weights of Palatino.

Italic and Oblique Forms

Italic was originally developed in the early sixteenth century as a typeface based on cursive handwriting. Today's italics are still individually crafted typefaces designed to blend with a specific roman (upright) typeface.

Times Roman
Times Italic

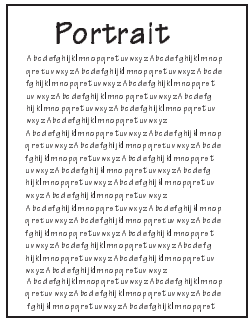
ITC Avant Garde Roman
ITC Avant Garde Oblique

Oblique (or slanted) type forms, however, are not designed and crafted individually but are mechanically slanted versions of the roman form from which they derive.

Orientation

Orientation is the direction of the print or image on a page. Portrait orientation reads from left to right, across the narrower dimension of the page. Landscape orientation also reads from left to right but places the print across the wider dimension of the page. Spreadsheet and table applications commonly use landscape printing. Both terms

derive from painting; a portrait is usually a vertical view while a landscape is usually a horizontal view.



Resident Fonts, Typefaces, and Symbol Sets

Resident PostScript Fonts

The following 39 PostScript fonts are resident in your printer. See your QMS vendor if you are interested in expanding your printer's typeface families.

All of these typeface families are authentic: they are licensed, they carry the true name, and they have multilingual character sets.

Serif Fonts

ITC Bookman Light
ITC Bookman Light Italic
ITC Bookman Demibold
ITC Bookman Demibold Italic

Palatino Roman
Palatino Italic
Palatino Bold
Palatino Bold Italic

New Century Schoolbook Roman
New Century Schoolbook Italic
New Century Schoolbook Bold
New Century Schoolbook Bold Italic

Times Roman
Times Italic
Times Bold
Times Bold Italic

Courier
Courier Oblique
Courier Bold
Courier Bold Oblique

Sans Serif Fonts

ITC Avant Garde Gothic Book
ITC Avant Garde Gothic Book Oblique
ITC Avant Garde Gothic Demibold
ITC Avant Garde Gothic Demibold Oblique

Helvetica Condensed
Helvetica Condensed Oblique
Helvetica Condensed Bold
Helvetica Condensed Bold Oblique

Helvetica
Helvetica Oblique
Helvetica Bold
Helvetica Bold Oblique

Helvetica Narrow
Helvetica Narrow Oblique
Helvetica Narrow Bold
Helvetica Narrow Bold Oblique

Script Font

ITC Zapf Chancery Medium Italic

Pi or Symbol Fonts

Σψμβολ (Symbol)

✁✈■♑♌♋♦⬧ (ITC Zapf Dingbats)

Resident HP PCL Fonts

Your printer has the following resident HP PCL fonts. All fonts can be automatically rotated to landscape orientation. Some are fixed in pitch and point size while others are scalable. Unless otherwise noted, samples are show in 10 point size.

Serif Fonts

Courier 12 pitch 10 point
Courier 12 pitch 10 point Italic
Courier 12 pitch 10 point Bold

Courier 10 pitch 12 point
Courier 10 pitch 12 point Italic
Courier 10 pitch 12 point Bold

Times (scalable)
Times Italic (scalable)
Times Bold (scalable)
Times Italic Bold (scalable)

Sans Serif Fonts

Line Printer 16.66 pitch
8.5 point

Univers (scalable)
Univers Italic (scalable)
Univers Bold (scalable)
Univers Italic Bold (scalable)

Univers Condensed (scalable)
Univers Condensed Italic (scalable)
Univers Condensed Bold (scalable)
Univers Condensed Italic Bold (scalable)

Pi or Symbol Font

♑♓■♑♌♋♋♦♦ (ITC Zapf Dingbats)

Resident HP-GL Symbol Sets

Your printer has the following resident HP-GL symbol sets. All come in both fixed- and variable-spaced versions, and all are scalable.

9825 Character Set	ISO Portuguese
ANSI ASCII	ISO Spanish
French/German	ISO Swedish
ISO French	ISO Swedish For Names
ISO German	ISO United Kingdom
ISO IRV (International Reference Version)	JIS ASCII
	Katakana
ISO Italian	Roman Extensions
ISO Norway, Version 1	Scandinavian
ISO Norway, Version 2	Spanish/Latin American
	Special Symbols

Downloadable Fonts

The printer supports Type 1 and Type 3 host-resident and card-resident downloadable fonts and any PostScript format TrueType fonts. True-Type fonts in HP PCL format are not supported.

Optional Fonts

The printer supports Kanji fonts on a hard disk and Intellifont fonts on SIMMs.

Kanji Fonts

The six optional Kanji fonts are available through the Kanji Option Kit and they can be printed at a variety of point sizes and in different

styles and resolutions. (See chapter 6, “Printer Options,” later in this manual for more information on these fonts.)

Intellifont SIMM

The optional Intellifont SIMM increases the number of PCL 5 fonts from 20 to 37 for LaserJet 4Si compatibility. (See chapter 6, “Printer Options,” later in this manual for more information on these fonts.)

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4

Printer Configuration

In This Chapter . . .

- Methods of printer configuration
- Using the printer control panel
- Using the printer configuration menu

Introduction

This chapter begins by listing and describing the different ways you can configure your printer to meet your special printing needs.

The next section describes how to use the printer control panel to access the configuration menu and how to make configuration changes.

The rest of the chapter provides basic printer configuration information about all configuration menu options. The *QMS CrownNet Interface System Administrator's Guide (*shipped with your printer) contains the Administration/Communications/Network2/CrownNet menu configuration information (for the Ethernet interface). In both guides, menu features are grouped according to task. Each feature is introduced, then a table describes the feature's location in the configuration menu, the available choices for that feature, and the factory default (the value set at the factory).

Methods of Configuration

You have four major ways to configure your printer to meet your printing needs. In order of priority, they are

- Through an application
- Through PS Executive Series Utilities
- Through printer commands
- Through the printer control panel
- Through remote console, for TCP/IP Telnet, NetWare, EtherTalk, and LAN Manager/LAN Server

Using an Application

Using your application is the best way to control your printer since most printing is done on a per-job basis. This helps prevent confusion

in network environments and saves you from making changes at the printer control panel. Your application documentation explains how to control your printer settings: probably by choosing options from a printing menu.

Applications use printer drivers to send the appropriate commands automatically to the printer for the requested tasks. If your application doesn't have a QMS 1060E Print System driver, you can select a comparable PostScript driver, such as another QMS driver or a LaserWriter driver. However, comparable drivers may not allow you to access all of your printer's features, such as 600x600 dpi printing or collating. For best results, use the driver that accompanied your new printer. See Chapter 4, "Connecting to a PC," of the *Getting Started* guide, for detailed instructions about using a printer driver.

Using PS Executive Series Utilities

You can also use the PS Executive Series Utilities (shipped with your printer) to control the printer from your host. See the README file on the utilities disk for information on installing the utilities, and see the utilities on-line documentation for details on using the software.

Using Printer Commands

Printer commands (such as QMS Document Option Commands [DOCs], PostScript operators, and HP-GL and HP PCL commands) can enable job-specific features your application or page description language can't access. See appendix C, "Document Option Commands," of this manual for a list of the DOCs this printer supports. See the *QMS Crown Document Option Commands* manual (available for purchase from your QMS vendor) for more detailed information on these commands. See appendix E, "Manual Updates," of this manual for updated PCL 5 DOC information.

Using the Control Panel

Your printer is configured at the factory for the most typical printing environments, so most users don't have to use the control panel often. However, if you do need to change a printer setting for all print

jobs (not just on a per-job basis), you can do so through the control panel. If you are working in a shared printing environment, your system administrator should be the only person to make changes through the printer's control panel.

Using Remote Console

Many of the configuration choices that can be made at the control panel can be made through a remote console in a TCP/IP Telnet, NetWare, EtherTalk, or LAN Manager/LAN Server environment. To avoid confusion in a shared printing environment, only the system administrator should make configuration changes.

For information on accessing the remote console via CrownNet, see the *QMS CrownNet Interface System Administrator's Guide*. For information on accessing the remote console via TCP/IP Telnet and VMS Decnet and for information on using the remote console, see the *QMS Crown Remote Console User's Guide*.

» **Note:** *If a remote console has the printer off line, pressing the Online/Offline key will not take effect until the console puts the printer back on line.*

The rest of this chapter explains the configuration menu.

Configuration Menu

The printer's configuration menu allows you to change the default printer configuration settings. In other words, any changes you make affect all subsequent print jobs.

The options in the configuration menu are organized under three main menus:

- **Administration Menu**

  Use this menu to maintain printer-host communication information, and for selecting and configuring printer emulations, configuring special pages, printing engine calibration, and configuring hard disks (if installed).

» **Note:** *For information on printer-host communication using the Ethernet interface or any of the Administration/Communications/ Network2/CrownNet options, see chapter 2, "Printer Configuration," in QMS CrownNet Interface System Administrator's Guide.*

- **Installation Menu**

  Use this menu to establish passwords for the Operator Control and Administration menus. This menu displays only when an optional security card is installed.

- **Operator Control Menu**

  Use this menu to maintain document processing options (number of copies, media type, and paper orientation). These capabilities are usually handled most efficiently within specific print jobs since each job has its own requirements. However, if there is no way of specifying these options within a job, you may do so from the control panel.

Accessing the Configuration Menu

To access the configuration menu, make sure the printer is idle (`IDLE` displays in the message window), then press the Online/Offline key to take the printer off line (the Ready indicator is not lighted), and finally press the Menu key.

Example

The following table shows how to use the control panel menu keys to access the printer configuration menu. Press the control panel keys in the order shown. The printer responds by displaying a status message or configuration menu in the control panel message window.

» **Note:** *You may need to press the Next key more than one time to advance through the list of options.*

Press this key...	to...	For 1.5 seconds, the message window reads...	and then it reads...
Online/ Offline	Turn off the Ready indicator and enable printer configuration.	IDLE	IDLE
Menu	Access the configuration menu.	CONFIGURATION	OPERATOR CONTROL

The printer must be off line and idle before you can access the configuration menu to change printer configuration.

Selecting Configuration Menu Options

Once you access the configuration menu, you use the control panel keys to move through the menu to access the appropriate option. Use the following keys:

Press this key...	to...
Next	Advance to the next option or submenu within a menu.

Previous	Return to the previous option or submenu within a menu.
Select	Select an option or enter a submenu.

Example

To change the default printer emulation from ESP to PostScript, press the control panel keys in the order shown in the following table.

» **Note:** *You may need to press the Next key more than one time to advance through the list of selections or options.*

Press this key..	to...	For 1.5 seconds, the message window reads ...	and then it reads ...
Online/ Offline	Turn off the Ready indicator and enable printer configuration.	`IDLE`	`IDLE`
Menu	Access the configuration menu.	`CONFIGURATION`	`OPERATOR CONTROL`
Next	Advance to the Operator Control/ Administration menu.	`OPERATOR CONTROL`	`ADMINISTRATION`
Select	Access the Administration menu.	`ADMINISTRATIO N`	`COMMUNICATIONS`
Select	Access the Communications menu.	`COMMUNICATION S`	`TIMEOUTS`

Next (more than once)	Advance to the Communications/ Parallel menu.	TIMEOUTS	PARALLEL
Select	Access the Parallel menu.	PARALLEL	MODE
Next	Advance to the Parallel/Emulation menu.	MODE	EMULATION
Select	Access the Emulation menu.	EMULATION	*ESP
Next (more than once)	Advance to the Emulation/ PostScript menu.		POSTSCRIPT
Select	Select PostScript as the default emulation		POSTSCRIPT IS SELECTED
	After 3 seconds you are returned to the Parallel/ Emulation menu.	PARALLEL	EMULATION

» **Note:** *Shaded table cells indicate that the message scrolls.*

Changing Character Information

Sometimes, rather than selecting an option, you need to enter character information. A character is any letter, digit, or symbol. A field is a group of characters that have meaning. Use the printer control panel to enter character information in the message window during printer configuration. The maximum length of the message window is 16 characters.

Entering character information through the control panel is similar to setting the time and date on a digital watch. You enter one character at a time. The current input character flashes. Use the following keys to change the current input character:

Press this key...	to...
Next	Advance to the next choice for the current input character.
Previous	Return to the previous choice for the current input character.

Once you have changed the current input character, use the following keys to move the cursor to another input character:

Press this key...	to...
Select	Advance the cursor to the next character.
Menu	Return the cursor to the previous character.

To exit from the character selection process, move the cursor to the last character of the input field (the character farthest to the right) and press the Select key, or move to the first character of the input field (the character farthest to the left) and press the Menu key.

When you exit, the printer verifies the character information and confirms it in the message window. If the character information is valid, you are returned to the previous menu; if it is invalid, you are returned to the input field. Press the Menu key to cancel any changes to the character information.

If the current character information is longer than the value that you need to enter, replace each extra character with a space. The printer interprets a space at the end of character information as a blank.

Example

To change the HP-GL emulation scaling percent, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message or configuration menu in

the message window. An flashing cursor indicates the current input character in the message window.

» **Note:** *You may need to press the Next key more than one time to advance through the list of selections or options.*

Press this key...	to...	For 1.5 seconds, the message window reads ...	and then it reads ...
Online/ Offline	Turn off the Ready indicator and enable printer configuration.	`IDLE`	`IDLE`
Menu	Access the configuration menu.	`CONFIGURATION`	`OPERATOR CONTROL`
Next	Advance to the Administration menu.	`OPERATOR CONTROL`	`ADMINISTRATION`
Select	Access the Administration menu	`ADMINISTRATION`	`COMMUNICATIONS`
Next	Advance to the Communications /Emulation menu.	`COMMUNICATIONS`	`EMULATIONS`
Select	Access the Emulation menu.	`EMULATIONS`	`*ESP`
Next (one or more times)	Advance to the Emulations/HP-GL menu.		`HP-GL`

Select	Access the HP-GL menu.	HP-GL	PLOTTER
Next	Advance to the HP-GL/Scaling Percent menu.	PLOTTER	SCALING PERCENT
Select	Access the Scaling Percent menu.		100
Previous	Lower the current character to 0.		000
Select	Select 0 and move the current character to the next 0.		000
Next (4 times)	Advance the current character to 5.		050
Select	Select 5 and move the current character to last 0.		050
Select	Select 50 as the default scaling percent.		50 IS SELECTED
	After 3 seconds you are returned to the HP-GL/ Scaling Percent menu.	HP-GL	SCALING PERCENT

Saving Configuration Changes

Before the printer can accept print jobs with configuration changes, the changes must be saved.

Example

To save your configuration changes, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key...	to...	For 1.5 seconds, the message window reads...	then it reads ...
Online/ Offline or Menu	Exit from the menu and be prompted to save your change (Online/ Offline) or return to the previous menu (Menu).	SAVE CHANGES?	*NO
Next	Advance to the Save Changes?/ Yes option.		YES
Select	Select Yes. The printer saves your changes, and returns to idle.		IDLE
Online/ Offline	Turn on the Ready indicator and enable the printer to accept and print new jobs.		IDLE

» **Note:** *Some Administration menu changes require that the printer be restarted before they take effect. Some changes restart the printer automatically while others display the message* REBOOT NOW? *in the control panel message window. If this message appears, select YES to restart the printer and have the changes take effect immediately, or select NO to wait until you manually restart the printer before the changes take effect.*

Canceling Configuration Changes

If you change a configuration option and then decide to cancel that change, you can do so when exiting from the configuration menu.

Example

To cancel your configuration changes before they have actually taken effect, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key...	to...	For 1.5 seconds, the message window reads...	then it reads ...
Online/ Offline or Menu	Exit from the menu and be prompted to save your change (Online/ Offline) or return to the previous menu level (Menu).	SAVE CHANGES?	*NO

Select	Select No. The printer does not save your changes, and returns to idle.		IDLE
Online/ Offline	Turn on the Ready indicator and enable the printer to accept new jobs.		IDLE

Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish. If you need to change the message window language, use the Keypad Language option in the Administration/Miscellaneous menu.

Menu	Administration/Miscellaneous/Keypad Language
Choices	English, French, German, Spanish
Default	English
Notes	This printer must be restarted for changes to the Keypad Language menu to take effect.

Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made to the printer's configuration menu, you can reset all of the configuration values to their factory defaults.

Menu	Administration/Miscellaneous/Restore Defaults
Choices	Yes, No
Default	No
Notes	This process takes several minutes to complete.

» **Note:** *If you save a change and for some reason wish to return to the previous state, use the Advanced Status Page as a reference.*

Rebooting the System

Use this option to restart the system after making a group of configuration menu changes. After changing any option that requires a system restart, you are prompted to `REBOOT NOW?,` if you use this option, you can choose No because you want to make other configuration changes, then you should use this option to restart the system and have all configuration menu changes take effect.

Menu	Administration/Miscellaneous/Reboot System
Choices	Yes, No Yes—Reboots the system. No—Does not reboot the system.
Default	No
Notes	This process takes several minutes to complete.

» **Note:** *If you save a change and for some reason wish to return to the previous state, use the Advanced Status Page as a reference.*

Configuration Menu Options

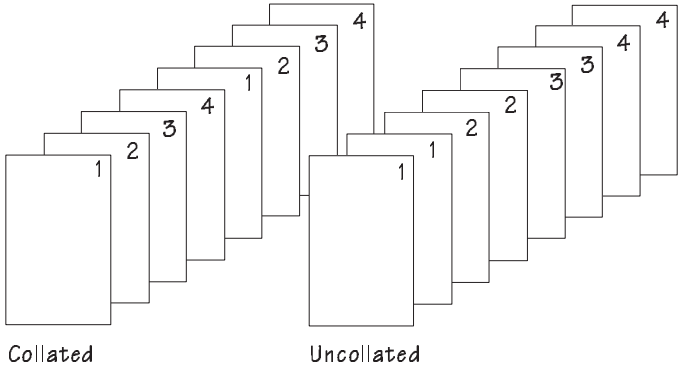
The rest of this chapter describes the options in the printer configuration menu. Information is organized in the following order:

- Collation
- Copies
- Emulations
- Flash Memory
- Hard disks
- Interfaces
- Media input
- Media orientation

- Media output
- Media size
- Memory
- Optional features
- Passwords
- Printer engine
- Printer start-up options
- Special pages
- Timeouts

Collation

One of the features of your printer is collation: the printing of sets of multiple copies of a document in numeric order. Your printer is capable of delivering multiple copies of your files in collated order to the output tray. The following figure shows the collated and uncollated stacking for two copies of a four-page file.



The main advantage of collation is convenience and the time savings derived from not having to separate and sort individual copies of a

document. Each copy of the document exists as a whole unless chunk collation has occurred.

Enabling/Disabling Collation

Menu	Operator Control/Collation
Choices	On—Enable collation. Off—Disable collation.
Default	On

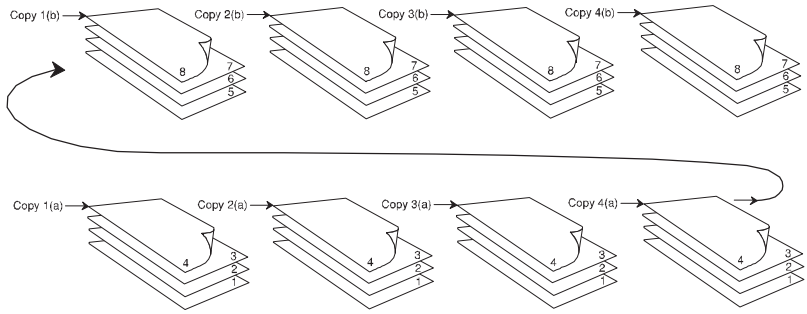
Working with Chunk Collation

For a multiple copy document with collation On, there must be enough display list memory to hold the display list blocks (R1) for all pages in the collation range. See the “Memory” section of the *Reference,* for more information on the Display List compressed blocks. If there is not enough memory, then a chunk collation boundary is forced after the last compiled page of the collation range.

Chunk Collation

This mechanism of introducing a forced boundary is known as chunk collation. Chunk collation breaks a document into several smaller, more manageable sets. For example, in the following illustration, copies “a” and “b” of each set must be manually combined to create one

collated document. The order of printing is copy 1(a), copy 2(a), copy 3(a), copy 4(a), copy 1(b), copy 2(b), copy 3(b), and copy 4(b)..



To greatly improve collation performance, which allows you to collate longer and more complex print jobs on the QMS 1060E Print system, you can do one of the following:

- Add more printer memory, which automatically increases the Display List client's memory settings. See chapter 6, "Printer Options," of this manual for information on how to install additional memory.
- Take any memory, if available and not being used by other clients, and add it to the Administration/Memory/K Mem Display memory setting.

▲ **Caution:** *This option should be used only by individuals who are familiar with adjusting memory clients' values. Incorrect use of this option could cause your system to operate incorrectly.*

- If your printer has an optional hard disk and if Administration/Memory/Enable Disk Swap is set to On, then any extra memory is distributed to all clients.
- Collate through your application.

» **Note:** *Collating through your application is more time consuming than collating through the printer. The application sends the complete job the requested number of times rather than sending it once and holding data in printer memory.*

Collating PCL 5 Files

PCL 5 allows you to set the number of copies you want to print per page rather than per file. When collation is turned off, the printer prints the requested number of copies for each page. However, when collation is turned on, the printer looks at the number of copies for the first page and prints that many copies of each page.

Example—You have a 3-page PCL 5 file and specify 3 copies of page 1, 1 copy of page 2, and 2 copies of page 3.

- With collation turned off, the pages print in the following order: 1, 1, 1, 2, 3, 3.
- With collation turned on, the pages print in the following order: 1, 2, 3, 1, 2, 3, 1, 2, 3.

Copies

While it is usually preferable to use your application to select the number of copies of your document you want to print, you can change the default number of copies for all print jobs through the printer control panel.

Menu	Operator Control/Copies
Choices	001-1000
Default	001
Notes	Sets the default number of copies for all subsequent print jobs. When power is turned off and then back on again, the number of copies is restored to the default setting of 001.

Flash Memory

The system software in your QMS 1060E Print System is stored on 4 MB of flash memory that can be erased and rewritten to “in a flash.” This allows you to update the system software without opening up the printer and installing new PROMs. Updated system software allows you to take advantage of future enhancements to the printer.

» **Note:** *The Ethernet (CrownNet) software is on socketed PROMs (Programmable Read Only Memory). It is not part of the system software; therefore, is not software loadable.*

Enabling/Disabling New Flash Image

Use the Administration/Miscellaneous/New Flash Image menu to update the system software (image in flash ROM).

Menu	Administration/Miscellaneous/New Flash Image
Choices	Yes—Download new system code No—Don’t download new system code
Default	No

Updating System Software

Updating the system software is a three-step procedure:

1 **Choose the appropriate compressed system software files.**

2 **Install the system software on your computer.**

3 **Download the system software to the printer.**

The following sections explain these steps in detail.

▲ **Caution:** *Some fonts downloaded on your printer's hard disk are copy-protected. Therefore, when you upgrade the system software (release 2.0 or later firmware) on your QMS 1060E Print System, these fonts must be re-downloaded in order for the printer to recognize them. See your font documentation for downloading instructions.*

Choosing the Appropriate System Software Files for Downloading

System software is contained on 8 disks—4 PC and 4 Macintosh. The disks you use depend on the type of computer you are using, whether your printer is functioning or not, the current firmware release, and how you plan to download the system software to the printer.

Computer	Disk Set to Use	Hard Disk Space Needed (approx.)	Printer		Firmware Release*	Interfaces for Downloading
			Functional	Non-Functional		
Macintosh	SYSTEMLOADER	1.75 MB	√	√	1.*x*	Serial
	SYSTEMDL.PS	3.25 MB	√		2.*x*	All
PC	SYSTEM.DL	1.75 MB	√	√	1.*x*	Parallel, Serial
	SYSTEMDL.PS	3.25 MB	√		2.*x*	All

* The printer's firmware release number is listed on both the start-up and status pages.

Installing the System Software

Once you have identified the appropriate print system software disk set (using the table in the previous section), you must install the software on your computer's hard disk before you can download it to the printer.

1 Ensure that your computer has enough free hard disk space for the system software.

2 Create a new folder (Macintosh) or directory (PC) on your computer.

3 Insert Disk 1 of the appropriate print system software disk set in your computer's disk drive.

4 Install the files on your computer's hard disk.

- **Macintosh**

  a Open the Installer application.

  - **If you're using the SYSTEMDL.PS file** (see the table in the previous section), double-click the PRINTSYSTEM.INSTALLER file icon.
  - **If you're using the SYSTEM.DL file** (see the table in the previous section), double-click the SYSTEM-LOADER.1 icon.

  b In the dialog box that appears, change the Install Location to the folder you created in step 2. Use the drop-down list box to select Select Folder, in the Select the Installation Folder dialog box select the appropriate disk and folder, and then click Select.

  c Click Install to begin the installation.

  d When prompted, insert disk 2 of the system software.

  The installation takes approximately 1.5 minutes. The Installer places the appropriate system software file (either SYSTEMDL.PS or SYSTEMLOADER) in the folder you selected in step b.

  e When the installation is finished, you're prompted to click Quit to exit the Installer program.

- **PC**

  a At the DOS C:*DIRECTORY* prompt, type `x:pkunzip x:system↵` where *DIRECTORY* is the name of the new directory you created in step 2, and *x* is the name of the disk drive in which you inserted Disk 1.

  b Follow the prompts. They instruct you to insert the

system software disks in the following order:

- Last disk (system software disk 2)
- Disk 1 (system software disk 1)
- Disk 2 (system software disk 2)

- **UNIX**

  a Follow the instructions given above for either the Macintosh or the PC.

  b After the system software file has been decompressed on hard disk of the Macintosh or the PC, upload the decompressed file to the UNIX system.

5 Download the system software to the printer.

The procedure for downloading system software depends on whether the print system software is functional (the printer starts up normally, and `IDLE` displays in the message window) or non-functional (the printer can't start up; the message window remains blank), and which system software file you decompressed in the previous step.

See one of the following sections for instructions:

- "Downloading System Software to a Functional Printer—SYSTEMDL.PS"
- "Downloading System Software to a Functional Printer—SYSTEM.DL"
- "Downloading System Software to a Non-Functional Printer"

Downloading System Software to a Functional Printer—SYSTEMDL.PS

If the print system software is non-functional (the printer can't start up), go to a following section, "Downloading System Software to a Non-Functional Printer."

If the print system software is functional (the printer starts up normally, and IDLE displays in the message window), and if you decompressed the file SYSTEMDL.PS in the previous section, use these instructions.

Before You Begin Downloading the Software

- Ensure that the system software is installed, as described in the previous section.
- Turn on the printer, wait for IDLE to appear in the message window, and then print an advanced status page.

  This procedure may change the current configuration settings. The advanced status page provides a record of all current configuration settings, so you can verify them, and reconfigure them, if necessary, after the system software has been updated.
- Ensure that the Administration/Communications/*Interface*/Emulation menu (where *Interface* is the interface you plan to use to download the system software), is set to ESP or PostScript.
- Ensure that the printer is on line and idle.

Macintosh

1 In the Chooser, choose the printer to be upgraded.

2 Open PS Executive by double-clicking on the PS Exec icon.

3 From the File menu, choose Print PS File.

4 Click the Option button, make sure all options are disabled, and then click OK.

5 Select the SYSTEMDL.PS file, and choose Send.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your computer. The printer's Ready indicator blinks as the new system image is copied to flash memory.

After the updated system software has been written to flash memory, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

6 **Print another advanced status page, and verify that the configuration settings match the previous configuration settings (on the advanced status page printed in the "Before you Begin Downloading the Software" section).**

7 **If there are differences in the configuration settings, reconfigure them through the printer configuration menu.**

8 **On your computer's hard disk, delete the folder containing the SYSTEM.SEA and SYSTEM.SEA.2 files.**

PC and UNIX

1 **Download the new system software PostScript file SYSTEMDL.PS to the printer, over any available interface, the way you would normally send a PostScript file.**

For example, you might use PS Executive, **copy,** or **fstprn** from a PC, or **qpr** or **put** from a UNIX system.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your computer. The printer's Ready indicator blinks as the new system image is copied to flash memory.

After the updated system software has been written to flash memory, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

2 **Print another advanced status page, and verify that the configuration settings match the previous configuration settings (on the advanced status page printed in the "Before you Begin Downloading the Software" section).**

3 **If there are differences in the configuration settings, reconfigure them through the printer configuration menu.**

Downloading System Software to a Functional Printer—SYSTEM.DL

If the print system software is non-functional (the printer can't start up), go to the following section, "Downloading System Software to a Non-Functional Printer."

If the print system software is functional (the printer starts up normally, and `IDLE` displays in the message window), and if you decompressed the file SYSTEMLOADER (Macintosh) or SYSTEM.DL (PC) in the previous section, use these instructions.

Macintosh

» **Note:** *This downloading procedure requires a connection from the Macintosh's serial port (either the modem or the printer port) to the printer's serial port. The cable must have a DIN-8 female connector on the Macintosh end. It must also must be wired as a null modem or it must have a null modem adapter. The type of connector for the printer's serial port end of the cable depends on the type of null modem assembly. Your Macintosh vendor can provide you with this equipment, or you can use the "Cable Pinouts" section of appendix B, "Technical Specifications," if you want to make your own cable.*

1 **Connect the Macintosh to the printer's serial port.**

You can use either the printer or modem port on the Macintosh. However, the modem port provides the fastest download.

» **Note:** *To use the printer port you must first disable AppleTalk in the Chooser.*

2 **Turn on the printer, wait for `IDLE` to appear in the message window, and then print an advanced status page.**

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

3 **Take the printer off line.**

4 Access the Administration/Miscellaneous/New Flash Image menu.

5 Select Yes in the New Flash Image menu.

The printer waits for the new system software (image) to be sent from your Macintosh. (YES remains in the message window until the new image is sent.)

6 Send the new system software image to the printer.

a At the Macintosh, double-click the SystemLoader icon.

b In the dialog box that appears, make sure the correct download port is selected, and then choose the Send button to start the download.

The downloading process takes about 10 minutes, depending on the size of the file and the speed of your Macintosh. The Ready indicator blinks as the new system image is written to flash ROM. After the updated system software has been written to flash ROM, the message `Download Complete!` appears on the Macintosh screen, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

7 Print another advanced status page, and verify that the configuration settings match the previous configuration settings (on the advanced status page printed in step 2).

8 If there are differences, correct them through the printer configuration menu.

9 On your Macintosh hard disk, delete the folder containing the SYSTEMLOADER application.

PC—Parallel Port

This is the recommended method for downloading from an IBM or compatible PC because it is the fastest method and because no additional cables or changes of port settings are necessary.

After you have installed the system software, as described in the previous section, use the following procedure to update the system software in flash memory.

» **Note:** *If you're using a serial port, skip to the following section, "PC—Serial Port."*

1 Turn on the printer, wait for `IDLE` to appear in the message window, and then print an advanced status page.

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

2 Take the printer off line.

3 Access the Administration/Miscellaneous/New Flash Image menu.

4 Select Yes in the New Flash Image menu.

The printer waits for the new system software (image) to be sent via your PC's parallel port. (YES remains in the message window until the new image is sent.)

5 Send the new image to the printer.

Type

```
copy /b system.dl lpt#↵
```

where # is 1 to 3. (/b refers to binary files.) If you're not sure of the number of the parallel port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Ready indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

6 Print another advanced status page, and verify that the current configuration settings match the previous configuration settings (on the advanced status page printed in step 1).

7 If there are differences in the configuration settings, correct them through the printer configuration menu.

PC—Serial Port

This method for downloading the system software from an IBM or compatible PC should be used only when a parallel port is not available because it's slower and because it requires a null modem cable (see the "Cable Pinouts" section of appendix B, "Technical Specifications," for more information) and special software to set the PC's serial port to 38400 baud (see step 2, below).

After you have installed the system software, as described in an earlier section, use the following procedure to update the system software in flash memory.

» **Note:** *If you're using a parallel port, refer to the previous section, "PC—Parallel Port."*

1 Connect the PC to the printer's serial port, using a null modem cable.

2 Download the DOS ModeX program from the QMS Bulletin Board.

Using your modem, dial in to the QMS Bulletin Board, as described in appendix A, "QMS Customer Support." After you access the QMS Main Library through the L (Library of Files) selection, do the following:

a Choose D (Download a File).

b Type `hibaud.exe`↵

c Exit from the Bulletin Board.

d Terminate the connection.

3 Type `hibaud`↵ to extract the ModeX files.

4 Set the PC's baud rate to 38400 by typing

```
modex.exe↵
modex # 38400 n 8 1↵
```

where # is 1-4. See the MODEX.DOC file for more information on this program.

5 Turn on the printer, wait for `IDLE` to appear in the message window, and then print an advanced status page.

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

6 Take the printer off line.

7 Turn on the RTS and CTS hardware flow control settings.

a Access the Administration/Communications/Serial/Hdwe Flow Ctl menu.

b Set RTS to On.

c Set CTS to On.

d Press the Online/Offline key to be prompted to save your changes.

e Select Yes to Save Changes.

8 Access the Administration/Miscellaneous/New Flash Image menu.

9 Select Yes in the New Flash Image menu.

The printer waits for the new system software (image) to be sent via your PC's serial port. (YES remains in the message window until the new image is sent.)

10 Send the new image to the printer.

Type

```
copy /b system.dl com#↵
```

where # is 1 to 4. (/b refers to binary files.) If you're not sure of the number of the serial port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Ready indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

11 **Print another advanced status page, and verify that the current configuration settings match the previous configuration settings (on the advanced status page printed in step 5).**

12 **If there are differences in the configuration settings, correct them through the printer configuration menu.**

Downloading System Software to a Non-Functional Printer

If the print system software is functional (the printer starts up normally, and IDLE displays in the message window), go to one of the previous sections, "Downloading System Software to a Functional Printer—SYSTEMDL.PS" or "Downloading System Software to a Functional Printer—SYSTEM.DL."

If the print system software is non-functional (the printer can't start up), use these instructions to download the system software.

Macintosh

If the current print system software is not functioning, you must connect your Macintosh to the printer's serial port to reinstall the system software. The downloading procedure will not work over the LocalTalk or CrownNet interface in this case.

» **Note:** *This downloading procedure requires a connection from the Macintosh's serial port (either the modem or the printer port) to the printer's serial port. The cable must have a DIN-8 female connector on the Macintosh end. It must also must be wired as a null modem or it must have a null modem adapter. The type of connector for the printer's serial port end of the cable depends on the type of null modem assembly. Your Macintosh vendor can provide you with this equipment, or you can use the "Cable Pinouts" section of appendix B, "Technical Specifications," if you want to make your own cable.*

1 Connect the Macintosh to the printer's serial port.

You can use either the printer or modem port on the Macintosh. However, the modem port provides the fastest download.

» **Note:** *To use the printer port you must first disable AppleTalk in the Chooser.*

2 Turn on the printer.

3 When the control panel indicators stop flashing (the message window will remain blank since the printer is non-functional), send the new system software file SYSTEM.DL to the printer.

a At the Macintosh, double-click the SystemLoader icon.

b In the dialog box that appears, make sure the correct download port is selected, and then choose the Send button to start the download.

The downloading process takes about 10 minutes, depending on the size of the file and the speed of your Macintosh. The Ready indicator blinks as the new system image is written to flash ROM. After the updated system software has been written to flash ROM, the message `Download Complete!` appears on the Macintosh screen, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

PC—Parallel Port

If the current print system software is not functioning, you must connect your PC to either the printer's parallel or serial port to reinstall the system software. The downloading procedure will not work over the CrownNet interface in this case.

Using the parallel port is the recommended method for downloading from a PC because the parallel port is faster than the serial port and because no additional cables or changes of port settings are necessary.

» **Note:** *If you're using a serial port, skip to the following section, "PC—Serial Port."*

1 **If necessary, connect the PC to the printer's parallel port.**

2 **Turn on the printer.**

3 **When the control panel indicators stop flashing (the message window will remain blank since the printer is non-functional), send the new system software file SYSTEM.DL to the printer.**

Type

```
copy /b system.dl lpt#↵
```

where # is 1 to 3. (/b refers to binary files.) If you're not sure of the number of the parallel port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Ready indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

PC—Serial Port

If the current print system software is not functioning, you must connect your PC to either the printer's parallel or serial port to reinstall

the system software. The downloading procedure will not work over the CrownNet interface in this case.

This method for downloading the system software from a PC should be used only when a parallel port is not available because it's slower and because it requires a null modem cable (see the "Cable Pinouts" section of appendix B, "Technical Specifications," for more information) and special software to set the PC's serial port to 38400 baud (see step 2, below).

» **Note:** *If you're using a parallel port, refer to the previous section, "PC—Parallel Port."*

1 If necessary, connect the PC to the printer's serial port, using a null modem cable.

2 Download the DOS ModeX program from the QMS Bulletin Board.

Using your modem, dial in to the QMS Bulletin Board, as described in appendix A, "QMS Customer Support." After you access the QMS Main Library through the L (Library of Files) selection, do the following:

a Choose D (Download a File).

b Type `hibaud.exe↵`

c Exit from the Bulletin Board.

d Terminate the connection.

3 Type `hibaud↵` to extract the ModeX files.

4 Set the PC's baud rate to 38400 by typing

```
modex.exe↵
modex # 38400 n 8 1↵
```

where # is 1-4. See the MODEX.DOC file for more information on this program.

5 Turn on the printer.

6 **When the control panel indicators stop flashing (the message window will remain blank since the printer is non-functional), send the new system software file SYSTEM.DL to the printer.**

Type

```
copy /b system.dl com#↵
```

where # is 1 to 4. (/b refers to binary files.) If you're not sure of the number of the serial port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Ready indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

Emulations

Use the Administration/Emulations menu to set the parameters for the available printer emulations. Optional printing emulations appear only if installed.

» **Note:** *To choose an emulation or ESP for a particular interface, use the appropriate interface menu in the Administration/Communications menu. See "Interfaces," later in this chapter, for more information.*

Setting ESP Default Parameters

The ESP Default Emul sets the ESP default emulation used when ESP is unable to identify the language of a print job. This allows the system administrator to select alternate default emulations.

Menu	Administration/Emulations/ESP Default
Choices	HPGL, Lineprinter, PCL5, PostScript
Default	PCL5

Setting HP-GL Parameters

Fifteen configuration choices are available under Emulations/HP-GL.

Enhanced Mode

Increases the resolution of the grid for downloaded characters. The GL UC (User-defined Character) command allows you to download and draw characters using an encoding scheme consisting of sequences of pen control movements and coordinate sequences. The characters are drawn on a grid that is superimposed on the character plot cell.

Menu	Administration/Emulations/HPGL/Enhanced Mode
Choices	On—Standard resolution for fixed- and variable-spaced fonts (4x8 grid). Off—Enhanced resolution for variable-spaced fonts (26x36 grid).
Default	Off

Expand Mode

Defines a larger imageable area which affects the default placement of the scaling points P1 and P2.

Menu	Administration/Emulations/HPGL/Expand Mode
Choices	On—Turn on expand mode Off—Use default scaling points, plotting range, and plotting area.

Default	Off
Notes	The available range of plotter units for a particular media size is only partially determined by setting the Expand Mode to On. When the printer/plotter senses the media size it automatically sets the hard clip limit to 15mm on three sides and 39 mm on the fourth. If Expand Mode is On, then the hard clip limits are set to 5mm on three sides and 29 mm on the fourth side. This is what allows you to define a larger imageable area. The HP-GL emulation senses the media type if the paper type is set to Scale to Paper. It is also possible to have the HP-GL emulation use a particular media size by setting Original Paper Type through the control panel or by using a Document Option Command.

Origin

Sets the image offset from the plotter's origin in 0.01" increments.

Menu	Administration/Emulations/HPGL/Origin/X Direction
Choices	0000-8500 (0"-8.5")
Default	0000

Menu	Administration/Emulations/HPGL/Origin/Y Direction
Choices	00000-11000 (0"-11.0")
Default	00000

Paper Type

Identifies the original image's paper size.

Menu	Administration/Emulations/HPGL/Paper Type
Choices	A, A3, A4, B, Scale to Paper
Default	Scale to Paper

Pen 1 - Pen 8

Sets the width and color for the eight plotter pens. Each pen has a width and a color option available.

» **Note:** *See chapter 5, "Additional Technical Information," for more information on the HP-GL emulation color encoding equation.*

Menu	Administration/Emulations/HPGL/Pen x/Width
Choices	0-60 (0.0-6.0 mm)
Default	Pen 1—7 (0.7 mm) Pen 2—3 (0.3 mm) Pen 3—3 (0.3 mm) Pen 4—3 (0.3 mm) Pen 5—3 (0.3 mm) Pen 6—3 (0.3 mm) Pen 7—3 (0.3 mm) Pen 8—3 (0.3 mm)
Note	A choice of 0 defaults to a pixel of "1".
Menu	Administration/Emulations/HPGL/Pen x/Color
Choices	Black, Blue, Brown, Cyan, Gray-25%, Gray-50%, Gray-75%, Green, Magenta, Orange, Red, Violet, Yellow
Default	Pen 1—Black (100% black) Pen 2—Black (100% black) Pen 3—Red (70% black) Pen 4—Green (41% black) Pen 5—Blue (89% black) Pen 6—Violet (59% black) Pen 7—Orange (25.8% black) Pen 8—Brown (50% black)

Plotter

Identifies the HP-GL plotter type.

Menu	Administration/Emulations/HPGL/Plotter

Choices	7475A, 7550A, 7470A, ColorPro
Default	7550A

Reverse Image

Determines whether an image is printed in reverse.

Menu	Administration/Emulations/HPGL/Reverse Image
Choices	On—Print a white image on a black background. Off—Print a black image on a white background.
Default	Off

Scaling Percent

Identifies the percentage to reduce or enlarge an image.

Menu	Administration/Emulations/HPGL/Scaling Percent
Choices	001-150 (1-150%)
Default	100 (100%)

» **Note:** *To scale plots, select the paper size originally used for the plot in the Paper Type menu and then enter the reduction or enlargement needed to fit the plot on the new page in the Scaling Percent menu. If necessary, enter new x,y coordinates in the Origin menu to reposition the plot on the page.*

Setting HP PCL5 Parameters

The PCL 5 menu maintains PCL 5 emulation attributes such as default font, symbol set, and point size. There are ten configuration settings. See appendix E, “Manual Updates,” for updated information on the PCL 5 emulation DOC commands.

Default Font

Sets the printer's default font.

Menu	Administration/Emulations/PCL 5/Default Font
Choices	Courier12, Courier12bold, Courier12italic, Courier10, Courier10bold, Courier10italic, Lineprinter, Times*, Times*italic, Times*bold, Times*blditalic, Univ*, Univ*italic, Univ*bold, Univ*blditalic, Unicond*, Unicond*italic, Unicond*bold, Unicond*blditlc, Select by index,
Default	Courier12
Notes	Fonts with an asterisk "*" in their names are scalable. Their default point size is set by the Point Size X100 option. Choosing Selectbyindex as the default font selects the font by the index that is set through the Default Font Index option. All courier fonts (courier10 and courier12) and lineprinter are bitmap fonts, so they have a fixed point size. Selecting a bound, bitmap font overrides the default settings for symbol set and point size. An unbound font uses the specified default symbol set if possible, and a scalable font uses the default font size.

Download Location

Controls the default storage location of PCL objects (fonts, macros, and patterns) when it is not otherwise specified through DOC commands.

Menu	Administration/Emulations/HP PCL 5/Downld Location
Choices	Disk—All downloaded PCL objects are stored in the default disk resource, if present. Memory—All downloaded PCL objects are stored in temporary storage in RAM.

Default	Disk
Notes	» **Note:** *Before downloading any fonts, macros, or patterns ensure that the printer has enough memory to do the download. See chapter 6, the "Problems Downloading Fonts" section, for information on increasing printer memory when downloading fonts.* DOC commands specifying resources override this option on a per-job basis. If this option is set to Disk and no hard disk is installed, memory is used as the default storage location. If the printer has both a hard disk and a large amount of memory, setting this option to Memory enhances printer performance.

Symbol Set

Selects the default symbol set for the emulation. Not all symbol sets are available with certain resident fonts. In particular, the Desktop, PS Math, Math 8, Microsoft Pub, Pi Font, PS Text, Ventura Intl, Ventura Math, Ventura US, and Windows symbol sets can not be used with the resident bitmap fonts: courier10, courier10bold, courier10italic, courier12, courier12bold, courier12italic, and lineprinter.

The five Dingbat symbol sets (PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats-100, Zapf-Dingbats200, Zapf-Dingbats300) can be used with all fonts.

Menu	Administration/Emulations/HP PCL 5/Symbol Set
Choices	Roman-8, PC-850, PC8-US, PC8-DN, ECMA-94, Legal, HPGerman, HPSpanish, ISO-2, ISO-4, ISO-6, ISO-10, ISO-11, ISO-14, ISO-15, ISO-16, ISO-17, ISO-21, ISO-25, ISO-57, ISO-60, ISO-61, ISO-69, ISO-84, ISO-85, Desktop, PS Math, Math 8, Microsoft-Pub, Pi-Font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, Windows, PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, Zapf-Dingbats300
Default	Roman-8
Notes	If a mismatch between symbol set and fonts occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed for your printer, this matches the Times* font, but other user-installed fonts could change this result.

Lines Per Inch

Sets the default lines printed per inch in PCL jobs, regardless of page size.

Menu	Administration/Emulations/PCL 5/Lines/Inch X100
Choices	100 to 4800
Default	600
Notes	You must enter the number of lines per inch times 100. For example, 6 lines per inch is entered as 600; 6.6 lines per inch is entered as 660.

Line Termination

Indicates the default line termination mode. This setting specifies the treatment of line feeds and carriage returns. (See Appendix E, “Manual Updates” for more information on line termination).

Menu	Administration/Emulations/PCL 5/Line Termination
Choices	CR=CR LF=LF CR=CR+LF LF=LF CR=CR LF=CR+LF CR or LF=CR+LF
Default	CR=CR LF=LF

Point Size x100

Sets the point size for scalable default fonts in units of hundreths of a point. For example, a 24 point default point size is selected by entering 2400. The smallest increment allowed in point size is .25 point (for example, 8.5 point and 8.75 point fonts are allowed, but 8.6 point is not).

Menu	Administration/Emulations/PCL 5/Point Size x100
Choices	00025-99975 (0.25-999.75 points)
Default	01200 (12 points)
Notes	If the font is not scalable or if a bitmap font is specified, the setting is ignored.

Retain Temporary

Allows you to control the PCL print environment across print jobs.

Menu	Administration/Emulations/PCL 5/Retain Temporary
Choices	Off, On, On Compatibility Off—Resets PCL to its default state at the end of each PCL print job, executes an implicit <ESC>E at the start and end of the job, and deletes any temporary fonts, macros, and patterns. On—Resets PCL to its default state at the end of each PCL print job. Temporary fonts, macros, and patterns from previous PCL jobs are retained in memory after the print job has completed. You can recall these downloaded fonts, macros, or patterns from within your PCL file without having to download them again. On Compatibility—Retains the entire state of PCL as well as the temporary macros, fonts, and patterns from previous PCL jobs.
Default	Off
Notes	A retained state is cleared if the user does the following: ■ Explicitly clears the PCL state by sending an <ESC>E or Printer Job Language. ■ Turns off the printer. (Note that if Retain Temporary is set to On or On Compatibility and power is turned off and back on again, all temporary objects on the disk's standard resource will become permanent. RAM-based temporary objects are lost). ■ Changes any PCL front panel option. ■ Sends any PCL-specific DOC commands (except the DOC emulation command). ■ Sends a PCL job from a different communications port. For example, the state set up by a PCL job using the parallel port is cleared if a subsequent PCL job arrives at the serial port).

Scalable Fonts

Specifies whether to enable or disable the printing of PCL 5 scalable fonts by an application. This feature may be useful when printing PCL 4 documents which may inadvertently select unwanted scalable fonts.

Menu	Administration/Emulations/HP PCL 5/Scalable Fonts
Choices	Enable, Disable Enable—Allows selection of scalable fonts. When you print PCL 4 documents, PCL 5 may substitute scalable fonts that could cause your PCL 4 documents to print incorrectly. Disable—Prints using bitmap fonts only.
Default	Enable

Default Font Index

Sets the Default Font Index when the Default Font is set to selectby-index.

Menu	Administration/Emulations/HP PCL 5/Default Font Idx
Choices	0 to 32767
Default	Selectbyindex value

Monochrome GL/2

Allows your printer to emulate a monochrome or color plotter.

Menu	Administration/Emulations/HP PCL 5/Monochrome GL/2
Choices	On, Off On—Sets the printer to monochrome (2 pen). Off—Sets the printer to color (8 pen). Since a monochrome print system has two pen colors only (black and white), grayscale patterns are substituted for other colors. The printer maps each pen to its assigned color, then converts the color to a grayscale using the National Television System Committee (NTSC) color standard for luminosity coefficients (Additive System): Y = .3R + .59G + .11B Examples on How to Use the Color Standard Formula White Y = [(1*0.3) + (1*0.59) + (1*0.11)]—100% gray Black Y = [(0*0.3) + (0*0.59) + (0*0.11)]—0% gray Red Y = [(1*0.3) + (0*0.59) + (0*0.11)]—30% gray Green Y = [(0*0.3) + (1*0.59) + (0*0.11)]—59% gray Yellow Y = [(1*0.3) + (1*0.59) + (0*0.11)]—89% gray Blue Y = [(0*0.3) + (0*0.59) + (1*0.11)]—11% gray Magenta Y = [(1*0.3) + (0*0.59) + (1*0.11)]—41% gray Cyan Y = [(0*0.3) + (1*0.59) + (1*0.11)]—70% gray
Default	On Pen Color Defaults: Pen 0 = White Pen 1 = Black Pen 2 = Red Pen 3 = Green Pen 4 = Yellow Pen 5 = Blue Pen 6 = Magenta Pen 7 = Cyan

Setting Line Printer Parameters

The following twelve configuration options are available.

Autowrap

Indicates whether long lines are to be wrapped to the next line instead of being truncated.

Menu	Administration/Emulations/Line Printer/Autowrap
Choices	On—Wrap long lines. Off—Truncate long lines.
Default	On

Character Map

Specifies the type of character map to be used.

Menu	Administration/Emulations/Line Printer/Character Map
Choices	ASCII, EBCDIC
Default	ASCII

CR IS CRLF

Stipulates whether each carriage return (CR) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Administration/Emulations/Line Printer/CR IS CRLF
Choices	On—Translate all carriage returns to line feeds. Off—Use carriage returns only as carriage returns.
Default	Off

FF IS CRFF

Stipulates whether each form feed (FF) in the print job is translated to a carriage return/form feed (CRFF) combination.

Menu	Administration/Emulations/Line Printer/FF IS CRLF
Choices	On—Translate all form feeds to carriage return/form feed combinations. Off—Use form feeds only as form feeds.
Default	On

Font

Sets the printer fonts for the current print job. Any PostScript fonts available on the printer can be used. To see a list of available Post-Script fonts, print an advanced status page through the printer configuration menu or through the PS Executive Series Utilities.

Menu	Administration/Emulations/Line Printer/Font
Choices	All printer-resident PostScript fonts.
Default	Courier

LF IS CRLF

Stipulates whether each line feed (LF) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Administration/Emulations/Line Printer/LF IS CRLF
Choices	On—Translate all line feeds to carriage return/line feed combinations. Off—Use line feeds only as line feeds.
Default	On

Line Numbering

Specifies that a five-digit number is to be prefixed to the beginning of each line.

Menu	Administration/Emulations/Line Printer/Line Numbering
Choices	On—Number all lines. Off—Don't number lines.
Default	Off

Lines Per Page

Specifies the number of lines printed on a page before an automatic page eject. Interline spacing is set to the selected point size. Logical pages consisting of more lines than specified are split into multiple pages.

Menu	Administration/Emulations/Line Printer/Lines per Page
Choices	1-128
Default	87

Margins

Defines the left, right, top, and bottom margins in 1/100" increments.

Menu	Administration/Emulations/Line Printer/Margins
Choices	Bottom 0-1400 (0"-14.00") Left 0-1400 (0"-14.00") Right 0-1400 (0"-14.00") Top 0-1400 (0"-14.00")
Default	Bottom 0 Left 0 Right 0 Top 0

Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

Menu	Administration/Emulations/Line Printer/Orientation
Choices	Landscape, Portrait
Default	Portrait

Point Sz 100ths

Sets the five-digit value used to specify the point size of the font for the current print job.

Menu	Administration/Emulations/Line Printer/Point Sz 100ths
Choices	00400-25600 (4-256 points)
Default	00880 (8.8 points)

Tab Stops

Specifies the number of spaces between tab stops.

Menu	Administration/Emulations/Lineprinter/Tab Stops
Choices	0-256
Default	8

Setting PostScript Parameters

The PostScript menu allows you to select a PostScript emulation level. and halftone type, and it enables gamma correction.

Emulation Level

Sets the default PostScript emulation level. This is useful if you have files prepared in an application which is not fully compatible with Adobe's PostScript Level 2 page description language.

Menu	Administration/Emulations/PostScript/Emulation Level
Choices	Level 2—For PostScript Level 2 files and most Level 1 files. Level 1 B/W—For files that contain only black-and-white PostScript Level 1 operators. This mode does not support the PostScript color operators, and use of color operators could even cause the print job to fail. Level 1 Color—For files that contain color PostScript Level 1 operators. This mode accepts color PostScript Level 1 operators and translates these commands to the appropriate grayscale. This is the recommended setting for Level 1 compatibility since it contains all of the commands in Level 1 B/W and the color commands.
Default	Level 2

Halftone Type

Sets the halftone type.

Menu	Administration/Emulations/PostScript/Halftone Type
Choices	Basic—Regular dot placement at 53 lpi for 300x300 resolution or 71 dpi for 600x600 resolution. Advanced—Variable dot placement according to the grayscales within the image. Generally, this option provides smoother transitions between grayscales within the image.
Default	Advanced

Gamma Correction

Sets the print engine's gamma correction. For more information on gamma correction, see chapter 5, "Print Quality," in the *Operation* guide...

Menu	Administration/Emulations/PostScript/Gamma Correction
Choices	No—Disables gamma correction. Yes—Enables gamma correction.
Default	No
Notes	Gamma correction is automatically adjusted when you change your printer's resolution, if this option is set to Yes. Gamma correction applies only to PostScript images. If turning on gamma correction doesn't yield a suitable gray-scale image for your needs, set a specific gamma correction value through your drawing application or through the PostScript **settransfer** operator. (See your drawing application documentation or the *PostScript Language Reference Manual* for more information.)

Hard Disks

Use the Administration/Disk Operations menu to perform disk operation processes that appear only when one or more optional hard disks are installed.

▲ **Caution***: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 860, QMS 860 Plus, QMS-PS 1700, QMS 1725, QMS 1725 SLS, QMS-PS 2000, QMS 2025, QMS-PS 3200, QMS 3225, QMS 3825 QMS 4525, QMS ColorScript 210/230, QMS Laser 1000, or QMS magicolor Laser Printer), this QMS 1060E Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is re-attached to an earlier QMS Crown printer again.*

This reorganization process takes time. If, when you first turn the printer on after attaching a previously used hard disk, it does not come on line immediately, be patient. Interrupting the reorganization process could cause all files on the hard disk to be lost.

Formatting a Hard Disk

Use this selection to format a hard disk. See chapter 6, “Printer Options,” for information on how to format a disk.

Hard disk specifications are included in Q-FAX document 6502, “QMS-tested SIMMs and Hard Disks.” See appendix A, “QMS Customer Support,” of this manual for information on accessing Q-FAX documents.

» **Note:** *If a `FORMAT FAILED` message displays in the message window during the Format Disk operation, the disk cannot be used. Press the Menu key to remove the message and contact your QMS vendor.*

Installing an Optional Font

Use this selection to add options, such as fonts to the hard disk via a font card. This selection copies data from the card to the hard disk. See chapter 6, “Printer Options,” for more information on how to install an option.

» **Note:** *If an error message displays in the message window during this operation, press the Menu key to remove the message and restart the operation from the beginning.*

Removing an Optional Font

Use this selection to remove a previously installed option and all of its files. See chapter 6, “Printer Options,” for more information on how to remove an option.

» **Note:** *If an error message displays in the message window during this operation, press the Menu key to remove the message and restart the operation from the beginning.*

Interfaces

You can customize all of the printer’s interfaces through the Administration/Communications menu.

Setting Ethernet Interface Parameters

For information on printer-host communication using the Ethernet interface, see chapter 2, “Printer Configuration,” of *QMS CrownNet Interface System Administrator’s Guide*.

Network 2

For information on options and defaults found on the Administration/Communications/Network2/CrownNet menu, see chapter 2, “Printer Configuration”, in the *QMS CrownNet Interface System Administrator’s Guide*.

Setting LocalTalk Interface Parameters

For information on configuring and using the LocalTalk interface, see chapter 6, “Printer Options,” later in this manual.

Setting Parallel Interface Parameters

Use the Administration/Communications/Parallel menu to set the parallel interface values used for printer-host communications.

Mode

The Centronics IEEE 1284 parallel interface supports five modes of operation: byte, compatibility, ECP (enhanced compatibility port), EPP (enhanced parallel port), and nibble. See chapter 5, “Additional Technical Information,” for a discussion of the different modes.

Menu	Administration/Communications/Parallel/Mode
Choices	Interactive—Establish bidirectional (IEEE 1284) communication between the host and the printer. Noninteractive—Establish unidirectional (IEEE 488) communication from the host to the printer. Disabled—Turn off parallel communication with the host. The printer stops accepting print jobs over the parallel interface.
Default	Noninteractive
Notes	The printer must be restarted for changes to the Mode menu to take effect. Changing the Mode setting will cause the `REBOOT NOW?` prompt to appear. Your can either choose to restart the printer now (to make this change take effect immediately) or you can manually restart the printer later and have this change take effect at that time.

Emulation

Sets the parallel interface's default emulation.

Menu	Administration/Communications/Parallel/Emulation
Choices	ESP, Hexdump, HPGL, PCL5, PostScript, Lineprinter Other optional emulations also appear, if installed.
Default	ESP

Min K Spool

Sets the minimum number of kilobytes of system memory allocated to the parallel interface.

Menu	Administration/Communications/Parallel/Min K Spool
Choices	00000-99999
Default	00015
Notes	This value must be less than K Mem For Spool (Administration /Memory menu). A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer is immediately restarted when a change is made to this option. (For example, change the value to 35, press the Select key, and the menu changes to Serial. Press the Online/Offline key and the printer automatically reboots.)

Spool Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

Menu	Administration/Communications/Parallel/Spool Timeout
Choices	00000-99999

Default	00030
Notes	If the spool timeout value expires before the printer has received all data for a job it is spooling, the printer terminates the spooled print job.

Data Bits

Sets the number of data bits transmitted per character in the data stream from the host.

Menu	Administration/Communications/Parallel/Data Bits
Choices	7 Bits, 8 Bits
Default	8 Bits
Notes	Set this value to match the number of data bits transmitted by your host.

End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command. These sequences allow hosts to enforce print job sequencing without considerations for interacting timeouts. See chapter 5, “Additional Technical Information,” for details on how to implement this feature on your QMS 1060E Print System.

Menu	Administration/Communications/Parallel/End Job Mode
Choices	None—The printer recognizes only the language specific terminator commands such as the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%-12345X command.
Default	None
Notes	Only one form of EOD is used at a time.

Def Job Prio

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously. In other words, you can give jobs received via the parallel interface priority over jobs received via other interfaces.

Menu	Administration/Communications/Parallel/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a parallel interface to a PostScript printer. See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Menu	Administration/Communications/Parallel/PS Protocol
Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also print. Binary Fixed—Enable binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints.
Default	Normal

Setting Serial Interface Parameters

Use the Administration/Communications/Serial menu to set the serial interface communication values used for printer-host communications. Fifteen options are available.

Mode

Enables or disables the PostScript interactive mode from the host.

Menu	Administration/Communications/Serial/Mode
Choices	Interactive—Establish two-way communication between the host and the printer. Noninteractive—Establish one-way communication from the host to the printer. Disabled—Turn off serial communication with the host. The printer stops accepting print jobs over the serial interface.
Default	Interactive
Notes	If you are not using the serial interface, you may select Disabled to prevent any jobs from being received through that interface. The printer must be restarted for changes to the Mode menu to take effect. Changing the Mode setting will cause the `REBOOT NOW?` prompt to appear. You can either choose to restart the printer now and this change takes effect immediately or you can manually restart the printer and have this change take effect later.

Emulation

Sets the serial interface emulation.

Menu	Administration/Communications/Serial/Emulation
Choices	ESP, Hexdump, HPGL, PCL5, PostScript, Lineprinter. Other optional emulations also appear, if installed.

Default	ESP
Notes	If you want to emulate an Adobe printer when using the PostScript emulation, you must also set Mode to Interactive.

Min K Spool

Sets the minimum number of kilobytes of system memory allocated to the serial interface.

Menu	Administration/Communications/Serial/Min K Spool
Choices	00000-99999
Default	00015
Notes	This value must be less than K Mem For Spool. A 00000 value does not turn off the spooling buffer for the serial interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer is immediately restarted when a change is made to this option. (For example, change the value to 35, press the Select key, and the menu changes to Serial. Press the Online/Offline key and the printer automatically reboots.)

Spool Timeout

Sets the number of seconds the interface waits for additional data from the host before terminating a spooled print job.

Menu	Administration/Communications/Serial/Spool Timeout
Choices	00000-99999
Default	00030
Notes	If you change this setting, you must ensure that the new setting does not conflict with the PS Wait Timeout and Emul Timeout values. If this value expires before the printer has received all data for a job it is spooling, the printer terminates the spooled print job.

End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command. See chapter 5, “Additional Technical Information,” for details on how to implement this feature on your QMS 1060E Print System.

Menu	Administration/Communications/Serial/End Job Mode
Choices	None—The printer recognizes only the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%12345X) command.
Default	None
Notes	If your host uses hardware flow control, set this option to match the type used by your host.

Def Job Prio

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously. In other words, you can give jobs received via the serial interface priority over jobs received via the other interfaces.

Menu	Administration/Communications/Serial/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)

Baud Rate

Sets the rate at which data is transmitted (bits per second) by the host over the serial interface.

Menu	Administration/Communications/Serial/Baud Rate
Choices	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Default	9600
Notes	Set this option to match the baud rate used by your host. Baud rates of 19200 and 38400 require RTS/CTS protocol hardware flow control (Administration/ Communications/Serial/Hdwe Flow Ctl menu). If you select a baud rate of 2400 or below, the Administration/Communications/Timeouts/Emul Timeout value should be increased to the following values: **Baud Rate** — **Emulation Timeout (seconds)** 2400 — 10* 1200 — 20 600 — 40 300 — 80 * A baud rate of 2400 works with an Emulation Timeout value of 5, but there is no margin for delays between characters.

Parity

Sets the check bit used to identify data transmission errors.

Menu	Administration/Communications/Serial/Parity
Choices	Even, Ignore Parity, None, Odd
Default	None
Notes	The printer's parity setting must match that of the host or application.

Ignore Parity

Allows you to set the Ignore Parity option.

Menu	Administration/Communications/Serial/Ignore Parity
Choices	On, Off
Default	Off

Receive Software Flow Control

If your host uses software flow control, this option allows you to choose the type of flow control used by the printer for its communication with the host.

Menu	Administration/Communications/Serial/Rcv Sw Flow Ctl
Choices	ETX/ACK, None, Robust XON/XOFF, XON/XOFF
Default	XON/XOFF
Notes	Set this option to match the type of flow control used by your host.

Transmit Software Flow Control

If your host uses software flow control, this option sets the software flow control used by the host for its communication with the printer..

Menu	Administration/Communications/Serial/Xmit SW Flow Ctl
Choices	ETX/ACK, None, XON/XOFF
Default	None
Notes	Set this option to match the type of flow control used by your host.

Data Bits

Sets the number of data bits transmitted per character in the data stream by your host.

Menu	Administration/Communications/Serial/Data Bits
Choices	7 Bits, 8 Bits

Default	8 Bits
	Set this value to match the number of data bits transmitted by your host.

Stop Bits

Sets the number of stop bits transmitted per character.

Menu	Administration/Communications/Serial/Stop Bits
Choices	1 Bit, 2 Bits
Default	1 Bit
Notes	Set this option to match the number of stop bits transmitted by your host.

Hardware Flow Control

Controls the flow of data between the printer and the host.

Menu	Administration/Communications/Serial/Hdwe Flow Ctl	
Choices	DSR POL	Normal, Reverse
	DSR	Off, On
	DTR POL	Normal, Reverse
	DTR	Off, On
	RTS	Off, On
	CTS	Off, On

Defaults	DSR POL DSR DTR POL DTR RTS CTS	Reverse Off Reverse On Off Off
Notes	If your host uses hardware flow control, set this option to match the type used by your host. However, to download printer system software via Flash memory through the serial port, RTS and CTS must be set to On, and your cable pinouts must be connected as shown in appendix B, “Technical Specifications.”	

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a serial interface to a PostScript printer. See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Menu	Administration/Communications/Serial/PS Protocol

Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Binary Fixed—Enable binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints.
Default	Normal

Media Input

Your QMS 1060E Print System comes standard with two media cassettes. Using the control panel, you can select a default media input source, chaining these input sources, and name them.

Selecting a Media Input Source

An option in the Operator Control menu allows you to select the default tray or cassette (inputbin) from which media is drawn into the printer.

Menu	Operator Control/Inputbin
Choices	Inputbin 1—Multipurpose tray. Inputbin 2—Lower cassette. Inputbin 3—Optional cassette, if installed.
Default	Inputbin 2

Chaining Media Input Sources

An option in the Operator Control menu allows you to "chain" inputbins (tray and cassettes) so that when the first inputbin empties, the printer will automatically draw media from another inputbin with either the same or any size and type of media (dependent on the choice selected).

Menu	Operator Control/Chain Inputbins
Choices	On—Switch to the next inputbin with the same size and type of media when the default inputbin is empty. » **Note:** *Make sure the two trays/cassettes use the same size paper* Off—Don't switch inputbins; use only the default inputbin. On Any—Switch to the next inputbin with any size and type of media when the default inputbin is empty. » **Note:** *This option appears only when 12 MB or more of memory is installed in the printer.*
Default	On
Notes	Use the Operator Control/Inputbin menu to set the default inputbin.

Naming Media Input Sources

Options in the Administration/Engine menu allow you to give each input-bin a more descriptive name. These names are displayed in the printer message window, where appropriate. (See the *Getting Started* guide for details on how to enter character information.) You can also use the descriptive names with DOC commands. (See the *QMS Crown Document Option Commands* manual, an optional purchase from your QMS vendor, for complete information on Document Option Commands.)

Inputbin 1

Inputbin 1 is the multipurpose tray.

Menu	Administration/Engine/Inputbin 1 Name
Choices	Up to 16 characters
Default	multipurpose

Inputbin 2

Inputbin 2 is the media cassette.

Menu	Administration/Engine/Inputbin 2 Name
Choices	Up to 16 characters
Default	lower

Inputbin 3

Inputbin 3 is the optional media cassette.

Menu	Administration/Engine/Inputbin 3 Name
Choices	Up to 16 characters
Default	optional

Media Orientation

While you can usually specify the orientation of a print job in your application, if you consistently use a certain media orientation, you can set this in the Operator Control/Orientation menu.

Menu	Operator Control/Orientation
Choices	Portrait—Vertical. Landscape—Horizontal.
Default	Portrait

Media Output

Naming the Media Outputbin

Even though there is only one outputbin, you may want to name it. You can use this name with DOC commands. (See the *QMS Crown Document Option Commands* manual for complete information on DOCs.)

Menu	Administration/Engine/Outputbin 1 Name
Choices	Up to 16 characters
Default	upper

Media Size

Identifying the Media Size

Use the Operator Control/Multipurpose Sz menu to identify the size media in the multipurpose tray (inputbin 1).

Menu	Operator Control/Multipurpose Sz		
Choices	A4	8.2"x11.7"	208 x 297 mm
	B5 ISO	6.93"x9.85"	176 x 250 mm
	Executive	7.25"x10.5"	184 x 267 mm
	Legal	8.5"x14.0"	216 x356 mm
	Letter	8.5"x11.00"	216 x 279 mm
	Com9	3.88"x8.88"	99 x 226 mm
	Com 10	4.13"x9.5"	105 x 241 mm
	DL	4.33"x8.67"	110 x 220 mm
	Monarch	3.88"x7.5"	99 x 191 mm
	C5	6.38"x9.01"	162 x 229 mm
	Envelope	3.6" to 6.5"(width)	92 x 169 mm
		5.86" to 9.43"(length)	149 x 240 mm
	Postcard	4.13”x5.85”	105 x149 mm
Default	Letter		

» **Note:** *The sizes (inches and millimeters) shown above appear in the documentation only for reference. They do not appear on the control panel display.*

Identifying a Default Media Size

Use an option in the Administration/Engine menu to identify the size media the print should use if it does not recognize the size specified for a print job.

Menu	Administration/Engine/Default Paper		
Choices	Letter	8.50"x11.00"	279.4x215.9 mm
	A4	11.69"x8.27"	297.2x420.4 mm
Default	Letter		

Memory

Use the Administration/Memory menu to custom-configure system memory (RAM) among the various memory "clients." The printer is shipped with 8 MB of memory. The size of most memory clients can be configured by experienced users (systems engineers and technical support staff) to best meet specific printing, computing, and network needs.

This section briefly describes each of the memory clients. See chapter 5, "Additional Technical Information," for more detailed information on the printer's memory and what benefits, if any, may result from adding memory to each client.

To find out how memory is currently allocated, print a status page using the Status Page key on the control panel or check each client individually in the configuration menu. The printer automatically reallocates added or freed memory to a pool shared among all the memory clients.

» **Note:** *Keep in mind that misallocating memory may hinder printer performance and that the print engine's fastest speed is 10 pages per minute, no matter how you configure the memory. If you try to set a memory client below a minimum required value, the message* `INCORRECT VALUE` *appears in the control panel message window.*

Disk Cache

K Mem Disk Cache is the number of kilobytes of RAM dedicated to the disk cache. This memory client speeds file system throughput on the hard disks, if one or more are installed, by storing frequently used data in system memory instead of continually storing it to and retrieving it from a hard disk.

Menu	Administration/Memory/K Mem Disk Cache
Choices	00032-08192
Default	00048
Notes	» **Note:** *You may need to decrease one of the other memory clients before increasing the disk cache client's size.* If no hard disk is used, the disk cache should be set to the minimum. The printer then reallocates this memory to other clients that need additional memory. If one or more optional hard disks are used, they remain unavailable until sufficient memory is available to the disk cache. You may need to install additional printer memory. See chapter 6, "Printer Options," for information on installing additional printer memory. If you change the K Mem Disk Cache value, the printer automatically restarts after you save your changes and exit from the configuration menu.

The amount of memory needed for this memory client depends on the size and number of hard disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching.

» **Note:** *If sufficient memory is available, all disks are accessible. If there is insufficient memory available to the disk cache, some disks may be accessible while others may not be.*

The recommended amount of memory for the disk cache client is

- 120 KB minimum
- 0.5 KB per MB of disk storage total for all disks

For example, the recommended disk cache client size for a single 120 MB hard disk is 180 KB, and for two 120 MB hard disks it is 240 KB. These are recommended values. The printer still operates with a smaller cache, but decreased performance may result.

Display

K Mem Display is the number of kilobytes of RAM dedicated to the display lists. The display list holds the intermediate representation of pages to be printed.

Menu	Administration/Memory/K Mem Display
Choices	00192-12288
Default	00172
Notes	If you change the K Mem Display value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Emulation

K Mem Emulation is the number of kilobytes of RAM to be used by non-PostScript emulations such as PCL 5 for temporary storage and for loading optional emulations. If you receive an emulation error, you may need to increase the amount of memory for this client.

Menu	Administration/Memory/K Mem Emulation
Choices	00448-08192
Default	00836
Notes	If you change the Emulation value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Emulation (Temporary)

K Mem Emul Tmp is the number of kilobytes of RAM to be used by non-PostScript emulations for storing downloaded (soft) fonts, forms, or macros. Data in this client disappears when the printer is turned

off. This client is listed as Temporary on the status page. Increasing this client's size increases the number of PCL downloaded fonts which can be accepted.

Menu	Administration/Memory/K Mem Emul Tmp
Choices	00128-08192
Default	00256
Notes	This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces. If you change the K Mem Emul Tmp value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Enable Disk Swap

Enable Disk Swap gives your printer virtual memory capability for all memory clients through the creation of a “swap file” on an optional hard disk, if installed. The default size of the swap file depends on the amount of RAM installed. The more RAM installed, the larger the default swap file size will be. The printer uses this file as an extension of its memory. As the physical RAM fills, the printer can swap the contents to the hard disk file to allow more space. This file swapping between disk and RAM occurs at various times throughout the printing process and is completely transparent.

» **Note:** *The printer must have a hard disk to take advantage of this feature.*

Menu	Administration/Memory/Enable Disk Swap
Choices	On—Don’t enable disk swapping. Off—Enable disk swapping.

Default	Off
Notes	If disk swapping is enabled and the system hard disk is removed or not turned on, the printer automatically resets Enable Disk Swap to Off. It would then be necessary to re-enable disk swapping, if you want this functionality. The printer must be restarted for changes to the Enable Disk Swap setting to take effect. Changing this setting causes the REBOOT NOW? prompt to appear. You can either choose to restart the printer now and this change takes effect immediately or you can manually restart the printer and have this change take effect later. If you Enable Disk Swap and restart the printer, then the disk cache size automatically increases to 256 KB. See the “Disk Cache” section, earlier in this chapter for more information.

Frame Buffer

The Frame Buffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the print engine. A frame holds the contents of each single page image. If you are uncertain about how to configure your printer’s memory, use only the Administration/Memory/Framebuffer menu. Or use this menu as a starting point before trying manually to configure your printer’s memory. It provides a simple method of defining how much memory should go to each of the clients for the most complicated printing conditions in your environment. Menu options allow you to specify the largest media size you plan to use for each resolution. Memory is then automatically allocated to the clients that require it. Any excess memory is allocated among all memory clients. See chapter 5, “Additional Technical Information,” for more information on memory and the Frame Buffer client.

» **Note:** *The printer does not allow you to choose features that do not work with the amount of memory currently installed.*

Using this option does not change the media size. It just ensures that you have enough memory allocated to the appropriate clients to print on the requested media size.

Menu	Administration/Memory/Framebuffer/300 dpi
Choices	Legal, Envelope, B5 ISO, Executive, Letter, A4
Default	Legal

Menu	Administration/Memory/Framebuffer/600 dpi
Choices	Legal, Envelope, B5 ISO, Executive, Letter, A4
Default	Legal
Notes	If you change the Framebuffer value, the printer automatically restarts after you save your changes and exit from the configuration menu.

PostScript Fonts

K Mem for PS Fonts is the number of kilobytes of RAM dedicated to caching previously scaled bitmap representations of fonts for the PostScript emulation interpreter. This reduces the number of times a PostScript font must be converted from outline form to bitmap form, thus reducing processing time. K Mem for PS Fonts is listed on the status page as Font Cache.

Menu	Administration/Memory/K Mem for PS Fonts
Choices	00088-08192
Default	00156
Notes	If you change the K Mem for PS Fonts value, the printer automatically restarts after you save your changes and exit from the configuration menu.

PostScript Heap

K Mem for PS Heap is the number of kilobytes of RAM dedicated to the PostScript emulation interpreter. This memory client holds downloaded PostScript emulation fonts, operators, and forms.

Menu	Administration/Memory/K Mem for PS Heap
Choices	01024-08192
Default	01348
Notes	If you change the K Mem for PSHeap value, the printer automatically restarts after you save your changes and exit from the configuration menu.

Printer Memory

MB Printer Mem, listed as “Total Memory” on the status page, is the number of megabytes of RAM available to be split among the various memory clients.

Menu	Administration/Memory/MB Printer Mem
Notes	This memory client is not user-configurable. It displays the total memory available on the printer, including the “swap file” size If an optional hard disk is attached, and if Administration/Memory/Enable Disk Swap is set to On.

Spooling

K Mem for Spool, listed on the status page as Host Input, is the number of kilobytes of RAM allocated to the spooling buffers. This memory client stores incoming data from the various interfaces until it is processed and printed.

Menu	Administration/Memory/K Mem for Spool
Choices	00112-06144

Default	00192
Notes	This value must be greater than the sum of the Min K Spool for all installed and enabled interfaces. If you change the K Mem for Spool value, the printer automatically restarts after you save your changes and exit from the configuration menu.

When the sum of the Min K Spool for all interfaces is less than K Mem for Spool, memory is allocated as follows:

1 Interfaces with Min K Spool (in the Administration/Communications menu) value greater than zero to receive their specified allocation.

2 Half of the remaining memory is distributed among any interfaces with a Min K Spool value of zero.

3 The other half of the remaining memory is called float memory. This memory is divided among all ports with a Min K Spool value of zero. If only one port has a Min K Spool value of zero, that port receives all float memory.

Optional Features

Several printer options (for example, an optional emulation, an optional network interface, and internal and external hard disks) affect printer configuration and the configuration menu. When an option is installed, its configuration information merges into the configuration menu. New menu entries may appear, and the choices for existing configuration values may be extended. See the documentation accompanying the option to learn exactly how it affects the configuration menu.

Passwords

Use the Installation menu to password-protect the Operator Control and Administration menus. The Installation menu appears when an optional security card is installed in your printer. See chapter 6, “Printer Options,” for more information on using a security card.

Selecting Passwords

Menus	Installation/Admin Password
Choices	Up to 16 characters (any letters, numbers, or symbols)
Default	Blank (no password)
Notes	Enable the password in the Installation/Use Admin Pwd menu.

Menus	Installation/Operator Passwrd
Choices	Up to 16 alphanumeric characters
Default	Blank (no password)
Notes	Enable the password in the Installation/Use Operator Pwd menu.

Enabling Passwords

Menus	Installation/Use Admin Pwd
Choices	On—Require a password to enter the Administration menu. Off—Don't require a password to enter the Administration menu.
Default	Off
Notes	Select the password in the Installation/Admin Password menu.

Menus	Installation/Use Operator Pwd
Choices	On—Require a password to enter the Operator Control menu. Off—Don't require a password to enter the Operator Control menu.
Default	Off
Notes	Select the password in the Installation/Operator Passwrd menu.

Using Passwords

When a password is required to enter the Operator Control or Administration menu, the message window displays

```
ENTER PASSWORD
```

when you use the Select key to enter the menu. Enter the password or press the Menu key to return to the menu.

If you specify the correct password, access to the selected menu is granted. However, if you enter an invalid password, the message window flashes

```
INVALID PASSWORD
```

for three seconds and then returns you to the configuration menu.

Printer Engine Features

Through the Administration/Engine menu you can set five print engine-related parameters.

Adjusting the Image Alignment

This option adjusts the horizontal and vertical placement of printed images.

To check image alignment, print a standard status page (use the Status Page key on the printer control panel). When the printer is placing images properly, the alignment angle bar in the lower-left corner of the status page is 0.5”/12.7 mm from the left and bottom edges of the page. If the angle bar is off, use the Image Align option to align the image horizontally and vertically in pixel increments. Movement is in pixel increments (1/300"/0.08 mm).

» **Note:** *Engine constraints may limit the accuracy of pixel alignment.*

Horizontal Offset

Menu	Administration/Engine/Image Alignment/Horiz Offset
Choices	000-300 (0.00"-1.00")
Default	100 (0.33"/.84 mm)

Vertical Offset

Menu	Administration/Engine/Image Alignment/Vertical Offset
Choices	000-300 (0.00"-1.00")
Default	100 (0.33"/.84 mm)

Setting Print Density

This option adjusts the amount of toner placed on the page, making the print appear lighter or darker. The higher the density, the darker the print looks and the higher the contrast is on the page.

» **Note:** *Remember that the print may also appear lighter on the page if Conserve Toner Mode is set to On.*

Menu	Administration/Engine/Print Density
Choices	0—Lowest density to 6—Highest density
Default	3

Specifying Page Recovery Action

When a media jam or other similar error occurs, the printer has the capability of reprinting the print job from the page on which the jam occurred.

Menu	Administration/Engine/Page Recovery
Choices	On—Reprints a print job from the page on which the jam or error occurred. Off—Don't reprint a print job when a jam or error occurs.
Default	Off

Setting Default Resolution

This option sets the print engine's default resolution.

Menu	Administration/Engine/Def Resolution
Choices	300 dpi—300x300 dpi resolution. 600 dpi—600x600 dpi resolution.
Default	600 dpi

Setting Toner Options

Two toner cartridge configuration options are available: Conserve Toner and Toner Out Act[ion].

Conserve Toner

To help you conserve toner, your printer provides a feature called Conserve Toner, which simulates draft-quality printing. The amount of toner used during printing is reduced by screening the black dots in a 2:5 ratio. In other words, two black dots are printed for every five black dots that would print in normal printing mode.

» **Note:** *Conserve Toner is designed for draft printing only. Turn Conserve Toner off when printing proof or final copies of documents to avoid any possible distortion of patterns, halftones, and images.*

Menu	Administration/Engine/Conserve Toner
Choices	On—Use Conserve Toner for draft-quality printing. Off—Don't use Conserve Toner.
Default	Off

Toner Out Action

You can configure the printer to stop when a TONER OUT error message is displayed in the message window or to continue printing.

Menu	Administration/Engine/Toner Out Act.
Choices	Continue—Continue printing when a TONER OUT message displays. Stop—Stop printing when a TONER OUT message displays.
Default	Continue
Notes	When this message is issued, there is still some toner left in the cartridge (enough for approximately 100 prints or less) but print quality may be deteriorated. This would be a good time to redistribute the remaining toner, and order a replacement cartridge.

Setting Energy Conservation

Your printer is compliant with US Environmental Protection Agency (EPA) Energy Star regulations. The EPA Energy Star Computers program promotes the use of energy-efficient personal computers, monitors, and printers and the reduction of air pollution caused by power generation.

The Energy Star option specifies whether the printer changes to a low-power state (the engine remains on, but the fuser turns off) after a a specified time of inactivity. When a print job is received processing begins immediately, the printer returns to normal power within 90 seconds.

Menu	Administration/Engine/Energy Saver

Choices	15—Use lower power after 15 minutes of inactivity. 30—Use lower power after 30 minutes of inactivity. 1 hour—Use lower power after one hour of inactivity. 2 hours—Use lower power after two hours of inactivity. 3 hours—Use lower power after three hours of inactivity. Off—Use normal power all of the time.
Default	30 minutes

Printer Start-Up Options

The Administration/Startup Options menu allows you to configure your printer to run certain options automatically when you turn it on.

Enabling/Disabling the Start-up Page

By default the printer prints a start-up page when you turn it on. The start-up page lists basic information about the printer, such as its name, the PostScript emulation level and version, and various printer settings. However, you can turn the start-up page off to conserve paper and toner.

Menu	Administration/Startup Options/Do Start Page
Choices	Yes—Print a start-up page each time the printer is turned on. No—Don't print a start-up page each time the printer is turned on.
Default	Yes
Notes	If you used the Administration/Engine/Inputbin x Name options to change the names of the inputbins, these names replace Multipurpose, Lower, and Optional in the message window.

Enabling/Disabling the SYS\START File

If you have a hard disk and Do Sys Start is enabled, when the printer is turned on, the controller checks the hard disk for a PostScript file named SYS\START and executes this file. This file does not print. Information on creating a SYS\START file is available via Q-FAX.

Menu	Administration/Startup Options/Do Sys Start
Choices	Yes—Check the hard disk for and execute the SYS\START file when the printer is turned on. No—Don't check the hard disk for a SYS\START file.
Default	Yes

Loading the PostScript Error Handler

You have the option of loading Error Handler, a diagnostic tool that allows you to identify PostScript errors encountered during a print job. Refer to the *PostScript Language Reference Manual* (Adobe Systems Incorporated, Reading, PA: Addison-Wesley, 1990, ISBN 0-201-18127-4) for more information on PostScript errors.

Menu	Administration/Startup Options/Do Error Handler
Choices	Yes—Load the Error Handler. No—Don't load the Error Handler.
Default	No
Note	The printer must be restarted for changes to the Mode menu to take effect.

Special Pages

Use the Administration/Special Pages menu to print special pages, such as calibration pages, status pages, header pages, and trailer pages. See the *QMS Crown Document Option Commands* manual, available for purchase from your QMS vendor, for detailed information on the contents of these special pages.

Using the Calibration Page

Use the calibration page to test and maintain optimal print quality, or to compare your printer's quality to that of other printers. The calibration image contains a gray-scale chart that lets you check print density and gamma correction to get the best possible gray scaling from your printer.

In addition, the calibration page can serve as a quick reference to help you determine whether to use a lower or higher resolution for a print job. Simply print a calibration page at one resolution, then reset the printer to the other resolution and print another page. By comparing the two pages, it's easy to see the difference in screens (frequency and angle), in type quality, and in precision of curves and diagonal lines.

Printing a Calibration Page

Menu	Administration /Special Pages/Calibration
Choices	Yes—Print a calibration page. No—Don't print a calibration page.
Default	Yes

Working with Status Pages

Printing a status page is a two-step procedure: Identify the type of status page you want to print, and then print it.

Identifying a Status Page Type

Two types of status pages are available:

- **Standard**—This one-page document lists printer identification information, current memory configuration, timeouts, communication settings, input buffer sizes, and available fonts.

- **Advanced**—This document, which can be five or more pages long, contains the same information as the standard status page as well as configuration menu settings, fonts, and downloaded emulations.

Menu	Administration/Special Pages/Status Page Type
Choices	Standard—Choose the single-page status page. Advanced—Choose the multipage status page.
Default	Standard
Notes	Use the Status Page key on the printer control panel to print the status page.

Printing a Status Page

After you have identified the type of status page to print, you can send it to the printer. To print the status page, press the Print Status key on the control panel, then press Select.

If you are printing a status page with the Status Page Type set to Advanced and a standard status page prints, then the printer needs more memory. You need to do one of the following :

- Add more printer memory which automatically increases the K Mem Emul. Temp client's memory setting. See chapter 6, "Printer Options" of the *Reference* guide for information on how to install additional memory.
- Take any extra memory, if available and not being used by other clients, and add it to Administration/Memory/K Mem Emul. Temp.

▲ **Caution:** *This option should be used only by individuals who are familiar with adjusting memory settings. Incorrect use of this option could cause your system to operate incorrectly.*

- If your printer has an optional hard disk, and if Administration/ Memory/Enable Disk Swap is set to On, then any extra memory is distributed to all memory clients.

» **Note:** *If an Intellifont SIMM is installed on a QMS 1060E Print System with a hard disk installed and with Administration/ Memory/Enable Disk Swap set to On, then the following appears in the Hard Disk Status section of the status page:*

```
%cartridge1%
%cartridge%
```

Working with Header Pages

A header page is a separator page that prints before a print job to help users sort out their jobs. The information on the header page can be customized. See the *QMS Crown Document Option Commands* manual for more information.

Enabling/Disabling Header Pages

Menu	Administration/Special Pages/Header Page
Choices	On—Print a header page before each job. Off—Don't print a header page before each job.
Default	Off

Identifying a Header Page Input Source

You can select the inputbin (tray or cassette) from which the printer pulls media when printing the header page.

Menu	Administration/Special Pages/Header Inputbin
Choices	Multipurpose—Pull header page media from the multipurpose tray. Lower—Pull header page media from the 500-sheet paper cassette. Optional—Pull header page media from the optional paper cassette.

Default	Multipurpose
Notes	If you used the Administration/Engine/Inputbin x Name options to change the names of the inputbins, these names replace Multipurpose, Lower, and Optional in the message window.

Working with Trailer Pages

A trailer page is a separator page that prints after a print job to help users sort out their jobs. The information on the trailer page can be customized. See the *QMS Crown Document Option Commands* manual, an optional purchase from your QMS vendor, for more information.

A trailer page is also used to list any errors encountered during a print job.

Enabling/Disabling Trailer Pages

Menu	Administration/Special Pages/Trailer Page
Choices	Off—Don't print a trailer/error page for each print job. On—Print a trailer/error page for each print job. On Error—If any print job errors exist, print a trailer page that lists the errors as well as other trailer page information. Errors Only—If any print job errors exist, print a trailer page that lists the errors but omits other trailer page information.
Default	Off

Identifying a Trailer Page Input Source

You can select the inputbin (tray or cassette) from which the printer pulls media when printing the trailer page.

Menu	Administration/Special Pages/Trailer Inputbin
Choices	Multipurpose—Pull trailer page media from the multipurpose tray. Lower—Pull trailer page media from the 500-sheet paper cassette. Optional—Pull trailer page media from the optional paper cassette.
Default	Multipurpose
Notes	If you used the Administration/Engine/Inputbin x Name options to change the names of the inputbins, these names replace Multipurpose, Lower, and Optional in the message window.

Timeouts

You can configure a number of printer timeout settings to set a limit to the amount of time the printer waits to perform a certain task.

Setting an Emulation Timeout

The emulation timeout is the maximum number of seconds emulations other than PostScript (such as HP-GL, HP PCL5, and Lineprinter) wait for incoming data.

Menu	Administration/Communications/Timeouts/Emul Timeout
Choices	00000-99999

Default	00005 (5 sec.)
Notes	A value of 000 is the same as infinity, no timeout. If you are setting an Emulation Timeout value for use with a baud rate of 2400 or less, then the following Emulation Timeout values must be used. Baudrate Emulations Timeout (seconds) 2400 10* 1200 20 600 40 300 80 *A baud rate of 2400 works with an Emulation Timeout value of 5, but there is no margin for delays between characters.

Setting an ESP Timeout

The ESP timeout is the maximum number of seconds the printer uses to match an emulation before printing the job in the default emulation.

Menu	Administration/Communications/Timeouts/ESP Timeout
Choices	00000-99999
Default	00003 (3 sec.)
Notes	A value of 000 is the same as infinity, no timeout.

Setting a PostScript Emulation Timeout

The PostScript emulation timeout is the maximum number of seconds the PostScript emulation waits for incoming data.

Menu	Administration/Communications/Timeouts/PS Wait Timeout
Choices	00000-99999

Default	00030 (30 sec.)
Notes	A value of 000 is the same as infinity, no timeout. If the printer goes idle after 30 seconds and does not print, increase this timeout. Large print jobs, such as those generated by graphics or computer-aided design applications, require that this number be increased to 00300 (5 min.).

Setting a Print Job Timeout

The print job timeout is the maximum number of seconds the printer processes a print job before it ends the job.

Menu	Administration/Communications/Timeouts/Job Timeout
Choices	00000-99999
Default	00000 (infinity, no timeout)
Notes	A value of 000 is the same as infinity, no timeout.

Setting a Manual Feed Timeout

The manual feed timeout is the maximum number of seconds the printer waits for the next sheet of media to be placed in the manual feed tray. If the timeout occurs, the manual feed job is canceled. The multipurpose tray, when accessed by a PostScript emulation operator as bin 0, is the manual feed tray.

Menu	Administration/Engine/Man Feed Timeout
Choices	000-300 (0-5 min.)
Default	060 (1 min.)
Notes	A value of 000 is the same as infinity, no timeout.

❖

5

Additional Technical Information

In This Chapter . . .

- Communication modes
- Gamma correction
- Memory
- End job mode
- Centronics and IEEE 1284 parallel interface
- PS Protocol option
- HP-GL color encoding

Introduction

This chapter provides additional technical information on communication modes, gamma correction, memory management, end job mode, the PS Protocol option, and HP-GL color-to-grayscale conversion.

Communication Modes

You can either allow your printer to operate in its default ESP mode or configure its ports to accept jobs in only a particular emulation (for example, PostScript emulation only, HP PCL emulation only, or HP-GL emulation only). If you do not want to reconfigure the interface ports for specific emulations (or if you need to return the printer to the default ESP mode), use the printer's control panel (the Administration/Communications menu). Configuring the printer through the control panel is described in chapter 4, "Printer Configuration," of the *Reference* guide. In the Administration/Emulations menu, you can configure the printer defaults for each emulation. (The optional LocalTalk interface uses only PostScript.)

Advanced users can also use PostScript operators to reconfigure printer ports. Generally, it is best to keep your printer in ESP mode. Since ESP mode is the factory default, all you have to do to use it initially is connect your host and printer and then send a file.

About Gamma Correction

Terms

Several terms related to gamma correction are explained in this section to help you better understand the gamma correction concept.

Gray Levels

Gray levels are a progressive series of gray tones between black and white. Gray levels are obtained by varying the ratio of black to white dots. The number of gray levels depends on printer resolution and screen frequency.

Halftone

A halftone is a printed copy of a scanned image as a set of tiny, evenly spaced spots of variable diameter that, when printed, visually blur together to appear as shades of gray. Your QMS 1060E Print System creates halftone cells by mapping each gray level onto a collection of dots.

Factors that influence the quality of a halftone are

- Printer resolution
- Screen frequency of the halftone
- Quality of the scan
- Quality of the original image
- Diameter of the laser beam

Changing print resolution from 300x300 dpi to 600x600dpi smooths the resulting spots. In addition, because each spot is represented by a wider range of dots, more gray levels are possible. The laser beam is part of the print engine, so it's not a factor you can adjust.

Halftone Types

Your printer provides two different types of halftones—basic and advanced. These two options allow you to customize the smoothness of the printed image according to the number of grayscales it uses.

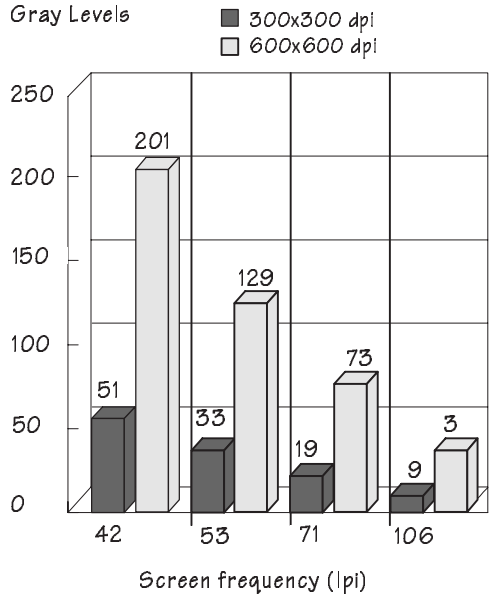
- **Basic**—Regular dot placement at 53 lpi for 300x300 resolution or 71 dpi for 600x600 resolution.
- **Advanced**—Variable dot placement according to the grayscale within the image. Generally, this option provides smoother transitions between grayscales within the image.

» **Note:** *When the advanced halftone type is chosen, gamma correction has no effect on the image.*

Screen Frequency

Screen frequency is the number of lines of dots that compose each inch of a halftone screen. The screen frequency of a halftone determines the number of spots used to represent gray levels in a given area. A 71 lines per inch (lpi) screen frequency has 71 lines of dots for each inch of the halftone screen.

The following illustration shows the relationship between screen frequency, gray levels, and print resolution. As the screen frequency increases, the number of gray levels decreases.



The number of gray levels that your printer can produce depends on the screen frequency and the print resolution. The default value for screen frequency using 600 dpi is 71 lpi. This typically allows 73 different levels of gray. The default value for screen frequency using 300 dpi is 53 lpi. This typically allows 33 different levels of gray.

You can change screen frequency through your application or by using the PostScript **setscreen** operator.

The extra gray levels available through higher resolution provide a smoother shift from the darkest black to very light grays while higher resolution provides sharper image outlines.

Screen Angle

A screen angle is the angle at which a halftone screen prints. The default screen angle for your QMS 1060E Print System is 45°. This is the normal angle for black and white printers. You can change the screen angle through the PostScript **setscreen** operator.

Gamma Correction Concept

Often in scanned images, gray scaling may be too light or dark to show details clearly. Using gamma correction on a gray-scale image is similar to using a graphic equalizer on a home stereo; the range of gray levels is adjusted for the best possible image. This sharpens overall midrange contrast while blacks (shadows) and whites (highlights) keep their original values. Gamma correction sets grayscale values specified through the PostScript **setgray** operator to your printer's gray-scale values.

Gamma correction is linked to print resolution. The main benefit of gamma correction is that it improves the copy quality of a scanned image by improving halftoning at a given resolution..

Menu	Administration/Emulations/PostScript/Gamma Correction
Choices	No—Disables gamma correction. Yes—Enables gamma correction.
Default	No
Notes	Gamma correction is automatically adjusted when you change your printer's resolution, if this option is set to Yes. Gamma correction applies only to PostScript images. If turning on gamma correction doesn't yield a suitable gray-scale image for your needs, set a specific gamma correction value through your drawing application or through the PostScript **settransfer** operator. (See your drawing application documentation or the *PostScript Language Reference Manual* for more information.)

A Special Note for QuarkXPress Users

Make sure you have installed the QMS 1060 and 1060E PDFs in the PDF folder in the QuarkXPress folder. While QuarkXPress 3.3 allows you to access either a PDF or a PPD, to have access to all of your printer's features, you should use the PDF. To select the PDF, go to the Page Setup dialog box in QuarkXPress, and hold down the Shift key while clicking the Printer Type list box. (The italicized selections are PPDs, and the non-italicized selections are PDFs.)

» **Note:** *The 1060E PDF allows you to choose between basic and enhanced (advanced) screening (or halftoning) in QuarkXPress. If this PDF is not present, you won't be able to used enhanced halftoning even though the printer supports it.*

Enhanced Screening

To use enhanced (advanced) screening (or halftoning), do the following:

At the Printer

- In the Administration/Emulations/PostScript/Halftone Type menu select Advanced.
- In the Administration/Emulations/PostScript/Gamma Correction menu select No.

In Your QuarkXPress Document (Page Setup Dialog Box)

- In the Printer Type listbox select 1060 Enhanced Screening PDF.
- If you have EFIcolor software loaded, select None.
- Set the Halftone Screen (lpi) to 95.
- Select Use PDF Screen Values.
- Ensure that the Halftoning box reads

  C 45 lpi 0
  M 45 lpi 0
  Y 45 lpi 0
  K 45 lpi 0

Basic Screening

To use basic screening (or halftoning), do the following:

At the Printer

- In the Administration/Emulations/PostScript/Halftone Type menu select Basic.
- In the Administration/Emulations/PostScript/Gamma Correction menu select Yes.

In Your QuarkXPress Document (Page Setup Dialog Box)

- In the Printer Type listbox select 1060 Basic Screening PDF.
- If you have EFIcolor software loaded, select None.
- Set the Halftone Screen (lpi) to the lpi of your choice.
- Deselect Use PDF Screen Values.

Memory

Memory allows your printer to store and retrieve information that's required to perform many of its tasks. The memory requirements of each printer are dictated by the applications to be run. Each printer comes standard with a certain amount of memory, but you may add more memory as necessary.

The memory is divided among blocks or "memory clients," each of which is dedicated to a specific printing and application purpose. Your QMS 1060E Print System allows you to distribute its memory among the various memory clients where it can best serve your specific printing needs. The following sections provide information on memory management so you can get the most from your printer.

Generally, there are two main reasons for wanting to reconfigure your printer's memory:

- To achieve maximum performance
- To enable additional features

The ability to configure your printer's memory doesn't necessarily mean that you must change your current configuration. If you're presently using all the features you need and the printer is performing efficiently, you shouldn't feel compelled to reconfigure your printer's memory. Just remember that if your printing needs change, not only do you have the ability to increase the amount of printer memory, but you also can redistribute it where you feel it would best meet your printing requirements.

QMS Memory Management

Managing the memory on your printer is much the same as managing your personal income. In money management, you have a certain amount of income and many ways of spending that income. You decide where that money goes according to what's important to you. There's no single correct way to manage money, but there is one best way for you according to your financial obligations. Any method is fine, as long as it works for you.

The same is true for managing the memory on your printer. There's no single correct way for everyone to allocate available printer memory. There is, however, a best way to configure your printer's memory for maximum efficiency in your specific printing environment. For example, if you use a large number of PostScript fonts of various point sizes, you may want to increase the amount of memory allocated to the area specified for PostScript fonts. Or you may want to increase memory to the area that minimizes slowdowns when collating large print jobs.

Memory configuration affects these things as well as the number of jobs that can be accepted by the printer, the number of options available simultaneously, the number of downloadable fonts and emulations that can be stored, and overall printer performance.

Memory Terms

Before you can configure your printer's memory efficiently, you must first understand the different types of memory and how they work together. Your QMS 1060E Print System documentation uses the following memory terms:

Memory

Memory allows your printer to store and retrieve information. It's the space within your printer where information is stored while being actively worked on.

Memory Client

A memory client is a block of memory dedicated to a specific function. Each memory client controls certain features. When insufficient memory is allocated to a specific client, the features it controls may not be accessible.

Excess Memory

Some printers designate one or two memory clients to receive all the excess, or undesignated, memory. On your QMS 1060E Print System, excess memory is distributed among all the memory clients.

Storage

Storage is a device in or on which information can be kept. There are three main types of storage—ROM, RAM and hard disk drives. ROM stores read-only data, RAM represents temporary storage, and hard disk drives hold information on a more permanent basis (see the following definitions).

ROM (Read Only Memory)

This type of memory contains data and/or machine-executable instructions that can be read but not modified. On your QMS 1060E Print System, the operating system code, resident fonts, and resident emulations are stored in ROM. This information is not lost when the printer's power is turned off.

RAM (Random Access Memory)

RAM is the memory your printer uses to perform each task. It can be written to and read from. Once a task is complete, the memory is free again to be used for another file. This memory is volatile, so if your printer loses power while a file is being sent, you must resend the file. The number and type of features you can run on your printer simulta-

neously depend on the amount of RAM you have and how that RAM is distributed. Your printer comes with 8 MB of RAM, upgradable to 64 MB by adding Single In-line Memory Modules (SIMMs).

RAM Disk

Also called a virtual disk, the RAM disk is an area of RAM that is used to simulate an additional hard disk. Data can be written and read more quickly than on a hard disk, but a RAM disk loses any information stored on it when the printer's power is turned off. The spooling buffer is a RAM disk client, if a hard disk is not installed.

SCSI (Small Computer System Interface)

The printer's SCSI (pronounced "scuzzy") port (located on an optional IDE-SCSI board) allows you to connect up to three optional SCSI hard disks, providing storage for fonts, emulations, and other files. Hard disks are also used to increase the amount of collation that can be accepted and provide a secondary storage area for spooled data, while providing virtual memory capabilities.

IDE

The optional IDE-SCSI board allows you to connect an internal IDE (Integrated Device Electronics) hard disk drive. "Integrated" means that the controller electronics are on the drive, so no separate adapter card or expansion slot is required.

Volatile Memory

This type of memory can be lost when the printer loses power. For example, most RAM is volatile.

Non-Volative Memory

This type of memory is not lost when the printer loses power.

NV RAM

This is a protected form of RAM, used to store information such as your printer's Configuration menu. Configuration options you have chosen, such as emulations, memory settings, and input bins, are

saved to this non-volative RAM. This information is not lost when you turn off your printer's power.

Physical Memory

The physical memory on your printer is equal to the amount of RAM installed.

Virtual Memory

Virtual memory extends the effective size of the printer's memory by using a disk file or swap file to simulate additional memory space. It enables the hard disk to accept data swapped from RAM to free temporarily the RAM for other tasks.

Flash Memory

Flash memory is quick loading, reprogrammable memory that holds information even when the printer's power is turned off.The QMS 1060E Print System has Flash memory available to hold system softwre and future system upgrades. The chief advantage of Flash memory is that system upgrades can be loaded from your host without the necessity of swapping out expensive EPROMS or having to place a service call.

» **Note:** *The Ethernet (CrownNet) software is on socketed PROMs (Programmable Read Only Memory). It is not part of the system software, therefore is not software loadable.*

Spool (Simultaneous Print Operations On Line)

Spooling is temporary storage to hold print jobs until the printer is available to process them.

Evaluation of Your Printing Environment

The first step in allocating your printer's memory is to define your printing needs. Each of your printer's features requires a minimum amount of memory. If you use a feature, you must allocate enough memory to the client which controls it. On the other hand, if there are features you don't use, you allocate the excess memory in the clients that control the unused features to other clients that need additional memory.

Evaluation Questions

To get a better idea of your printing requirements and your printer's capabilities, answer the following questions:

1 How much RAM does your printer have (standard and additional memory)?

2 Do you have the option of installing additional memory if it's needed?

3 Does your printer have any internal or external hard disks connected? If so, how many and what size?

4 Which resident emulations will you be running?

5 Will you be loading any non-resident emulations? If so, how many and which ones?

6 How many printer ports will be connected?

7 Do you have an optional interface connected?

8 How many people will be using this printer simultaneously?

9 How many downloadable fonts will you be using? What sizes? From which emulation?

10 Will you use many different sizes of fonts/typefaces?

11 How large are the files you typically print? How large is the largest file you'll be printing?

12 Are most of your files text, or are any graphics intensive?

13 Will you want to download fonts, forms, or operators to memory?

14 Will you be collating documents? If so, how large and complex will these documents be?

15 What media sizes will you be using?

16 Will you be printing at 300x300 dpi or 600x600 dpi?

After you have answered all of these questions, read the following sections to see which memory clients control the features you plan to use and which memory clients control features you don't need.

Memory Clients

Memory clients are blocks of printer memory that are dedicated to a specific purpose. Each of the memory clients is located in the Administration/Memory menu. When you allocate memory to a specific client through the control panel, it's allocated in kilobytes (KB). Each time you make changes in the Administration/Memory menu, print out a status page to confirm the memory reallocation.

» **Note:** *The value for each memory client must be divisible by 4 KB. Therefore, if a value is entered that is not evenly divisible by 4 KB, it's automatically converted to the next lower value that's divisible by 4 KB. See the "Printer Memory" section of chapter 4, "Printer Configuration," for each memory client's minimum and default settings.*

Frame Buffer

The Framebuffer memory client holds rasterized or bitmapped images of page faces which are ready to be sent to the physical print engine. Any task that affects the page faces—such as increasing paper size or printing at a higher resolution—may require increasing the amount of memory allocated to this client to boost print speed and overall system throughput.

A frame holds the contents of a single page image. Because the frame buffer memory is so critical to the actual printing of a page, its allocation takes precedence over that of other memory clients. Therefore, you cannot set the frame buffer to an amount smaller than that required to image a page of the selected size.

The number of frames needed to print at engine speed depends on what paper size you are using, and at what resolution. For example, printing at 600x600 dpi requires four times the amount of memory in the frame buffer than does 300x300 dpi.

If you are uncertain about how to configure your printer's memory, use only the Administration/Memory/Framebuffer menu. Or use this menu as a starting point before trying manually to configure your printer's memory. It provides a simple method of defining how much memory should go to each of the clients for the most complicated printing conditions in your environmnet. Menu options allow you to specify the largest media size you plan to use for each resolution. Memory is then automatically allocated to the clients that require it. Any excess memory is allocated among all memory clients.

» **Note:** *The printer does not allow you to choose features that do not work with the amount of memory currently installed.*

Using this option does not change the media size. It just ensures that you have enough memory allocated to the appropriate clients to print on the requested media size..

Menu	Administration/Memory/Framebuffer/300 dpi
Choices	Legal, Envelope, B5 ISO, Executive, Letter, A4
Default	Legal

Menu	Administration/Memory/Framebuffer/600 dpi
Choices	Legal, Envelope, B5 ISO, Executive, Letter, A4
Default	Legal
Notes	If you change the Framebuffer value, the printer automatically restarts after you save your changes and exit from the configuration menu.

The following table lists, for your information, the minimum number of KB that must be devoted to the frame buffer for all media size and resolution combinations:

Media	Minimum Frame Buffer Size (in KB)	
	300 x 300 dpi	600 x 600 dpi
Letter	960	3832
Legal	1236	4936
A4	996	3960
Envelope (all sizes)	468	1852
Executive	776	3100
B5 ISO	736	2984
Postcard	236	932

Display List

Also known as K Mem Display, this client stores compressed representations, or blocks, of the pages to be printed. It takes approximately 1 compressed block for a normal 8.5" x 11" (215.9 mm x 279.4 mm) text page, 4 compressed blocks for an 8.5" x 11" (215.9 mm x 279.4 mm) page that includes some graphics, and as many as 500 compressed blocks for an extremely complex page.

Many pages of compressed blocks (R1 blocks) belonging to multiple print jobs can be stored at the same time in the display list. If enough memory is allocated to this memory client, a page can always be ready to print as soon as another page has been imaged to the print engine.

The amount of memory required for each R1 block is printer specific. The QMS 1060E Print System takes approximately 64 KB of memory from the display list for each compressed block. However, if a page includes raster image data (for example, TIFF or bitmap data), each compressed block will require much more memory.

Increasing the amount of memory in this client may improve printing throughput and minimize slowdowns due to collating or printing complex pages. If not enough memory is allocated to this client, memory is taken from the excess memory client to complete a print job.

PostScript Font Cache

Also known as K Mem PS Fonts and Font Cache, this memory client stores bitmapped representations of previously scaled PostScript fonts. This process reduces the number of times a font must be converted from outline form to bitmap form. Printing pages that have characters already stored in the font cache is immensely faster than printing characters not yet in the font cache.

As the font cache memory fills, the printer makes room for new bitmapped characters by erasing those that have been in the cache longest without being used. By increasing the memory allocated to this client, the printer can store more characters and spend less time erasing and replacing characters in the cache. This client has a limit to the maximum point size it will store.

Normally, you don't need to change this memory client unless you use a large number of fonts at various point sizes. If you do, you may allocate additional memory to this client to improve printer performance. There's no specific formula to use in figuring the amount of memory required by the font cache, but after a certain point, large font caches cause the printer to take longer to print than smaller font caches because of the search time through the cache. The recommended font cache size is in the following ranges:

- 128-256 KB for 300x300 dpi printing
- 256-512 KB for 600x600 dpi printing

If the font cache is "really big" performance is slowed because all the fonts have to be searched. You should experiment to see what font cache size works best for you.

PS Heap

Also known as K Mem PS Heap, PostScript VM, and Virtual Memory, this client holds downloaded fonts, PostScript operators, and forms.

Inefficiently coded PostScript jobs can consume an unlimited amount of virtual memory or leave objects in the PostScript heap after the print jobs are completed, leading to virtual memory errors. If not enough memory is allocated to the PS heap, the job cannot print.

Increasing the memory allocated to this client allows more complex jobs to print and increases the number of fonts that can be downloaded to virtual memory. However, this client should be increased only if you receive a virtual memory error when attempting to print a job or download a font and only in small increments until the error message goes away. Excess memory in the PS heap is not being used.

Emulation

Also known as K Mem Emulation, this client is used to store any optional or loadable emulations, such as LN03 Plus. Increasing this client's memory allows you to load more than one optional emulation so they don't have to be reloaded every time a print job is sent.

If an emulation is loaded to process a print job and there is not enough memory in the emulation client, another emulation already loaded may be unloaded automatically to obtain enough memory. If you notice a delay in printing between jobs that have different non-resident emulations, it's possible that the emulations are having to reload each time they're run. Adding to the emulation client may eliminate the unloading and reloading of these emulations and, consequently, increase throughput.

Also increase the emulation client if you're printing complex non-PostScript jobs that may require more memory to process correctly.

Temporary Emulation

Also known as K Mem Emul Tmp and Emulation Temporary, this client sets the amount of system memory to be used by non-PostScript emulations for storing downloaded fonts, forms, and macros. By dedicating a portion of memory to this client, your printer can perform "context switching," the ability to retain downloaded fonts and forms even after the printer changes from one emulation to another. Context

switching prevents unnecessary repetitive downloading and traffic congestion on networks.

Normally, this memory client doesn't need to be changed unless you plan to download many different non-PostScript fonts such as PCL 5 fonts.

Spool Buffers

Also known as Host Input and K Mem for Spool, this memory client stores incoming data from all the interfaces until the emulation can process the print job. When enough memory is allocated to this client, the host becomes free more quickly, and the number of jobs that the printer can accept simultaneously is increased. You should consider the amount of data being sent simultaneously when allocating memory to the spool buffer. If available, a hard drive can supplement this client with additional memory needed for spooling. See the "Hard Disk Management" section later in this chapter.

» **Note:** *While increasing this client is beneficial in reducing network traffic, throughput speed is not necessarily increased. In addition, making this client too large could actually decrease throughput because of the overhead involved with managing a large spool.*

Disk Cache

This memory client stores frequently used data in system memory instead of continually storing and retrieving it from a hard disk. If a hard disk is used and a lot of disk access is required, adding memory to the disk cache may increase the printer's performance. For example, if many fonts are stored on disk, faster access to these fonts is achieved by increasing the disk cache size. Conversely, if no hard disk is used, the disk cache should be set to its minimum value until a hard disk is installed. However, when one or more hard disks are installed, they are not available until the disk cache client is increased.

The amount of memory needed for the disk cache client is dependent on the size of the disk, the number of disks, the number of subdirectories on each disk, and the amount of memory dedicated to caching. As long as the disk cache is enabled and there is enough memory in

the disk cache, all disks are accessible. If insufficient memory is allocated to the disk cache, some disks may be seen while others are not.

The disk cache is a high speed temporary buffer for data going to and from the hard disk. It can speed the printer in two ways:

- Information such as frequently referenced fonts and logos may still be in the cache and may not have to be pulled off a hard disk each time they're needed.
- Information being written to a hard disk can be held in the cache temporarily, if necessary, until a more convenient time to be written to disk.

The recommended amount of memory for the disk cache client is as follows:

- 20 KB internal usage
- 0.5 KB per MB of disk storage total for all disks
- 100 KB of memory dedicated to caching

For example, the recommended disk cache client size for a single 120 MB hard disk would be 180 KB, and for two 120 MB hard disks it would be 240 KB.

» **Note:** *After you format a hard disk and the* `FORMAT COMPLETE` *message is displayed in the message window, the formatted disk may not be available to the system until the printer is turned off and then on again.*

MB Printer Mem

This field shows the size of the physical RAM installed in the printer. If a hard disk is attached and Enable Disk Swap is set to On (Administration/Memory/Enable Disk Swap), it also shows the size of the "swap file."

System Memory

Also known as System Use, this non-configurable client is the amount of RAM used to run the printer's operating system. It's never

increased or decreased. The system memory subtracted from the total amount of RAM identifies the amount of RAM available for all the other memory clients.

Hard Disk Management

You can add one internal IDE drive and up to three external SCSI hard disks to your QMS 1060E Print System. These hard disks serve as secondary storage places for such items as downloaded fonts, emulations, and spooled data.

Hard disk specifications are included in Q-FAX document 6502, “QMS-tested SIMMs and Hard Disks.” See appendix A, “QMS Customer Support,” of this manual, for information on accessing Q-FAX documents.

Virtual Memory Support

Your printer supports virtual memory capabilities for the spooling buffer (Administration/Memory/K Mem for Spool menu) and the display list (Administration/Memory/K Mem Display menu) clients when a hard disk is installed and disk swapping is enabled.

These capabilities extend the amount of memory available for certain supported features, such as spooling to the spool buffer. If available, a hard disk can supplement this client with additional memory needed for spooling. See the “Hard Disk Management” earlier in this chapter.

End Job Mode

When sending print jobs through the serial and parallel protocols, some applications and their printer drivers append an end-of-document command (EOD) to each print job to ensure that each file prints correctly. The reason for this is that some protocols and print queuing systems send print jobs to the printer as one continuous data stream (one print job immediately following another).

But the problem with this system is that some applications are limited by the printer language and are unable to produce an EOD command. This becomes even more problematic when you are printing to a QMS 1060E Print System a series of print jobs in a variety of the emulations it supports. ESP technology examines the first part of each print job to determine its emulation. Once the emulation is identified, the print job processes without further checking. This minimizes any slowdown resulting from the sensing process. To help ESP technology determine the proper emulation of successive print jobs, the printer must be able to identify the end of job for each job.

Therefore, unless a wait timeout (the amount of time the printer is waiting on data from the host) occurs and ends each print job, or unless you add an EOD command between each file being printed through these protocols, some print jobs may be interpreted by the printer as one job and may “run” together. See chapter 4,“Printer Configuration,” for more information on emulation timeout.

When printing multiple jobs with little or no time delay and with no EOD command between jobs, the serial and parallel protocols may be unable to detect an end of job automatically. The End Job Mode feature on QMS Crown printers was designed to allow you to set the end of document for print jobs being sent through these protocols.

Common Reasons to Use End Job Mode

If you are printing via the serial and parallel protocols, and one of the following conditions exists, you may need to set the end job mode:

- Multiple print jobs with little or no time delay and with no EOD commands have been sent to the printer and the message window displays only one active job.
- Multiple print jobs of the same printer language have been sent to the printer and they print on the same page. (For example, you send the AUTOEXEC.BAT file with no EOD command followed with little or no time delay by the CONFIG.SYS file, and they both print on the same page.)

- Multiple print jobs of different printer languages “run” together as if they are a single print job. (For example, you send a PCL print job followed by a PostScript print job, and the PCL job prints and is followed by what appears to be program code instead of your PostScript print job.)
- You want to print multiple jobs with header pages.
- You want to print multiple jobs where job separation is important.

When your printer is in ESP mode, printing multiple jobs through the serial and parallel protocols and end job mode is not set, ESP technology interprets the emulation for only the first job. The print jobs that follow are interpreted as being the same emulation as the first job. For example, if there are two print jobs, the first a PCL file with no EOD command, and the second a PostScript file with a Ctrl-D (a PostScript end-of-file character)—ESP technology interprets the emulation of the first job correctly. But since the first print job has no EOD command, it “runs” into the second job, and even though the second job is PostScript, it prints in PCL.

Using the EOD Commands

Since the serial and parallel protocols may not be able to detect an EOD automatically, due to a lack of an EOD command in some printer languages, you can insert an EOD command at the end of your file to tell the printer where your print job ends. QMS Crown printers recognize two end-of-document commands: QMS EOD and HP EOD.

These commands are functionally the same. They enable data stream sensing for the EOD command, allowing your host computer to control print job separation. The QMS EOD and the HP EOD commands perform an end of document for all of the printer emulations supported on your QMS Crown printer (such as PostScript, HP-GL, HP PCL, and LN03 Plus).

See your system administrator or applications development department to have them identify the standard EOD command for your organization, or to have them select a standard EOD command.

Setting the End Job Mode for the Serial and Parallel Protocols

Your printer can be connected through the serial or parallel interface to a stand-alone PC, to a PC print server, or to some other type of print queuing system. This section provides a quick guide to the steps needed to set the end job mode for each environment. The following sections provide more detailed information for each step.

Stand-Alone PC

1 **Set the end job mode from the printer's control panel.**

2 **Add the EOD command to your file.**

» **Note:** *If using steps 1 and 2 is not feasible in your stand-alone PC environment, you can alternatively use a program that either causes an emulation timeout or that inserts an EOD command between each print job. See your QMS vendor for more information on this type of program.*

PC Print Server

1 **Set the end job mode from the printer's control panel.**

2 **Create a job separator to append an EOD command and send it between each print job.**

Other Print Queuing Systems

If you use a print queuing system other than a PC print server and you experience what appears to be an EOD command problem, you may need to use another procedure, such as a print utility, an initialization sequence, or a header page to add an EOD command. See your print queuing system documentation, your network administrator, or your QMS vendor for more information.

Setting the End Job Mode via the Control Panel

Use the following procedure to set the end job mode from the printer's control panel for printers connected via the serial or parallel interface to a stand-alone PC, a PC print server, or some other type of print queuing system:

» **Note:** *If you print both serial and parallel protocol jobs, then you must set the end job mode for each protocol.*

Wait for the printer to go idle, and then press the control panel keys in the order shown in the following instructions to access the End Job Mode option. The printer responds by displaying a status message in the message window.

» **Note:** *You may need to press the Next key one or more times to advance through the list of selections or options.*

Press this key...	to...	For 1.5 seconds, the message window reads...	and then it reads...
Online/ Offline	Turn off the Ready indicator and enable printer configuration.		IDLE
Menu	Access the configuration menu.	CONFIGURATION	OPERATOR CONTROL
Next	Advance to the Administration menu.		ADMINISTRATION
Select	Access the Administration menu.		COMMUNICATIONS

Next	Advance to the Communications/ Parallel (or Serial) menu.		PARALLEL (or SERIAL)
Select	Access the Parallel (or Serial) menu.		PARALLEL (or SERIAL) MODE
Next (one or more times)	Advance to the Parallel (or Serial) /End Job Mode menu.		END JOB MODE
Select	Access the End Job Mode menu.		NONE
Next	Advance to the appropriate option (QMS EOD, HP EOD, or None).		*OPTION*
Select	Select the option.		*OPTION* IS SELECTED
	Return to the Parallel (or Serial)/ End Job Mode menu.	PARALLEL (or SERIAL)	END JOB MODE
Online/ Offline	Receive prompt asking if you want to save your change.	SAVE CHANGES?	*NO
Next	Advance to the Yes option		YES
Select	Save changes and idle the printer		IDLE

Online/ Offline	Put the printer back on online		IDLE

» **Note:** *Shaded table cells indicate that the message scrolls.*

Adding an EOD Command to Your File

When adding an EOD command to your file, use the syntax for the selected EOD command exactly as written (the command's syntax is case sensitive).

» **Note:** *<ESC> represents the escape character. (The decimal value for the escape character is 027, and the hexadecimal value is 1B.) How you enter the escape character depends on your application. Some applications allow you to press and hold the ALT key and then type 027 to enter the escape character, while others allow you to type certain character sequences to represent the escape character. See your computer or application documentation to find out how to enter the escape character on your system.*

For this EOD command...	Use this syntax...
QMS EOD	%%EndOfDocument
HP EOD	<ESC>%-12345X

When the QMS EOD or the HP EOD is set, the printer does not recognize the Ctrl-D EOD command. Add your organization's standard EOD command to the end of your print file, or add it to a separate file as follows:

Adding an EOD Command to the End of Your File

Create an output file (for example, ASCII, PCL, or PostScript file to disk) and add your organization's standard EOD command (QMS EOD or HP EOD) to the end of that file.

Sample output file:

Text
Text
Text
Text
%%EndOfDocument

Adding an EOD Command to a Separate File

Create an ASCII text file that contains only the EOD command. For example, create a DOS batch file listing each print filename followed by the EOD command filename for each file being printed. Then "run" the batch file to print your list of files.

Sample DOS batch file:

Command	Explanation
Print mktg.doc	Job filename
Print end.txt	EOD command filename
Print acct.doc	Job filename
Print end.txt	EOD command filename

Creating a Network Job Separator

If your printer is connected to a network through a PC and the PC is acting as a print server managing the printing of shared network files, then your system administrator must create a job separator and associate it with a print job queue. Different network environments have different procedures for creating the job separator, such as initialization sequences, custom banner pages, print job headers, or print job trailers. The print server does not necessarily send multiple print jobs to the printer in the order that you queued them to the printer. The network job separator is accessed with each print job, so this ensures that network job separation is enforced. See *QMS Crown Network Notes* for more information on how to create a network job separator for several commonly used networks.

Parallel Interface Modes

In addition to the Centronics parallel interface, your printer provides IEEE 1284 bidirectional parallel interface, which supports five modes of operation. The printer automatically recognizes and uses the mode dictated by the host.

Byte Mode

Printer-host communication is done in bytes. The byte mode may be used by the host device in a DMA (Direct Memory Access) mode for more efficient operation.

When byte transfer is complete and there is no more data to transmit the host may do one of the following:

- terminate and return to the compatibility mode.
- stay in the HostBusy, Data Not Available phase.
- set HostBusy Low, putting the interface in the idle phase.

If there is additional data, the host may do one of the following:

- set HostBusy Low, indicating that the host can accept additional data.
- stay in the HostBusy, Data Not Available phase.
- terminate and return to the compatibility mode.

Check your host documentation to see if the host is 1284 compatible.

Compatibility Mode

Printer-host communication is done in a manner that ensures compatibility.

ECP (Enhanced Compatibility Port) Mode

This is an advanced version of byte mode which allows transfer of data in either direction without returning to the compatibility mode. The communication is a half-duplex channel with either device, the host or the printer, making a request for data transfer when there is available data. In the case of simultaneous requests for transfer, the printer always defers to the host.

EPP (Enhanced Parallel Port)

Printer-host communication is done via asynchronous bidirectional eight-bit transfer. A return to compatibility mode is not required.

Nibble Mode

Printer-host communication is done in nibbles (four bits; one-half byte) with the low order nibble sent first. A transfer of two nibbles is required for each byte of information.

PS Protocol Option

Your QMS 1060E Print System supports a new protocol for communication between the printer and a host computer over a LocalTalk, serial, parallel, or optional interface connection. This new protocol is called PS protocol. This binary communications protocol (BCP) allows any 8-bit binary value (0-255) to be treated as data, while allowing a few of the values to also function as special control characters. When communicating 8-bit binary data in binary or binary fixed mode, the printer uses the quoting mechanism of the binary communications protocol to distinguish between the special control characters and print job binary data.

To differentiate data from the special control characters, any data that is the same Hex value as one of the following special control characters must be quoted.

ASCII Keyboard	ASCII Name	ASCII Hex	Control Function
^A	SOH	0x01	Quote data character
^C	ETX	0x03	Abort job and flush to end of file
^D	EOT	0x04	End-of-file marker
^E	ENQ	0x05	(Reserved for future use)
^Q	DC1	0x11	XON in XON/XOFF flow control
^S	DC3	0x13	XOFF in XON/XOFF flow control
T	DC4	0x14	Job status request
^\	FS	0x1C	(Reserved for future use)

A data byte is quoted by replacing it with a two-character sequence. The first character is a ^A (ASCII hex 0x01), and the second character is the character itself XORed with the ASCII value 0x40. For example, to send the value 0x14(^T) as data, send the two-character sequence 0x01 0x54 (^a T) instead. (ASCII “T” is the result of XORing ^T with 0x40).

This method of quoting guarantees that whenever the printer receives any of the eight control characters, the control function is intended regardless of whether the preceding character is a ^A. Any data byte not equal to one of the eight special control characters is transmitted by sending the data byte.

For more information on BCP and quoting, see the *PostScript Language Reference Manual* (Adobe Systems, Inc., Reading, MA: Addison-Wesley, 1990, ISBN 0-201-18127-4), the “Adobe Serial and Parallel Communications Protocols Specification” (in *Adobe Developer Support.* Adobe Systems, Inc., February 14, 1992), and the “PostScript Language Reference Manual” (in *Supplement for Version 2011*, Adobe Systems, Inc., January 24, 1992).

Options

The following options are available in the PS Protocol menu. The default setting for all interfaces is Normal.

Menu	Administration/Communications/*Interface*/PS Protocol	
Choices	**Name and Description**	**Interfaces**
	Normal—Enables standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators.)	LocalTalk, Parallel, Serial, Ethernet, Token-Ring
	Normal Fixed—Enables standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators.)	LocalTalk, Parallel, Serial, Ethernet, Token-Ring
	Binary—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints)	LocalTalk, Parallel, Serial, Ethernet, Token-Ring
	Binary Fixed—Enables binary communications protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints.)	LocalTalk, Parallel, Serial, Ethernet, Token-Ring

	QBinary (Quoted Binary)—Enables binary communications protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF).	LocalTalk, Ethernet, Token-Ring
	QBinary Fixed (Quoted Binary Fixed)—Enables binary communications protocol. Print jobs cannot alter this value through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism for the special characters and ^D (EOF).	LocalTalk, Ethernet, Token-Ring
Default	Normal	
Notes	A data stream sent through the serial or parallel interface using Binary is treated the same as a data stream sent through an optional network interface using Quoted Binary. However, a data stream sent through an optional network interface using Quoted Binary is not treated the same as a data stream sent through the same interface using Binary.	

Advantages

The main advantage of using the Binary and Fixed Binary PS protocol modes when sending binary data is that these modes compress the data stream allowing your documents to be smaller so you can send smaller jobs to the printer. For example, some device drivers can format bit map images as binary data instead of as ASCII hex data.

Implementation

To implement PS protocol for sending binary data on your system you need a device driver available with some applications or operating systems, or you can alternatively use a program to read the data and write out the quoted characters. See your QMS vendor for any available information on device drivers or binary filter programs.

HP-GL Color Encoding

The term “pen” in the HP-GL emulation refers to a logical pen (in other words, the current pen position) rather than to a physical pen on a plotter. A pen and a pen color are selected to draw images. This emulation supports 8 pens and pen colors.

Since your QMS 1060E Print System is a monochrome (black and white) printer, the pen colors are converted to shades of gray. The default color mappings for the 8 pens are as follows:

Pen	Pen Color	Level of Gray
1	Black	100%
2	Black	100%
3	Red	70%
4	Green	41%
5	Blue	89%
6	Violet	59%
7	Orange	25.8%
8	Brown	50%

» **Note:** *The default color for both pen 1 and pen 2 is black. However, the pen width for these two pens is different. Pen 1 is 0.7 mm and pen 2 is 0.3 mm.*

The printer maps each pen to its assigned color, then converts the color to a grayscale using the National Television System Committee (NTSC) standard equation for encoding color. This equation converts a given set of CMYK values to grayscale. For the 8 pen colors

assigned to pens 1 - 8, the printer uses the designated grayscale; for any other pen color, the printer uses the following equation:

$$[(C*0.3) + (M*0.59) + (Y*0.11) + K] \div 255$$

» **Note:** *This equation assumes that each grayscale is a byte value that ranges from 0 to 255 (100%). If the sum of the left-side (calculation in brackets) of the NTSC equation is greater than 255, then the sum is set equal to 255.*

Example

Any color can be reproduced by using some combination of CMYK. If you have defined the following CMYK values for the color brown in your application, the NTSC equation that follows shows you how the percentage of grayscale for the color is derived.

CMYK Value
C (96)
M (128)
Y (224)
K (0)

$$[(96*0.3) + (128*0.59) + (224*0.11) + 0] \div 255 =$$
$$[(28.80) + (75.52) + (24.64) + 0] \div 255 = 50\%$$

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6

Printer Options

In this chapter . . .

- Additonal paper cassettes
- Font and security cards
- Downloadable emulations
- Single in-line memory modules (SIMMs)
- Network and LocalTalk interfaces
- Internal and external hard disks

Introduction

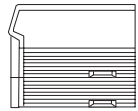
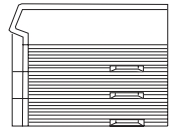
QMS offers many options that expand the QMS 1060E Print System's capabilities. Contact your QMS vendor for a complete list of all the available options. See appendix A, "QMS Customer Support," for the list of telephone numbers.

Additional Media Cassettes

Additional media cassettes provide two main benefits:

- Increased media-feed capacity. Install the optional feeder and a second cassette (the same size as the other cassette) and then chain cassettes. (See chapter 3, "Advanced Printing Features," in the *Operation* guide for more information.)
- Expanded flexibility to switch media size, color, and type without having to unload and load media. Keep replacement cassettes close by, and you can easily change media by slipping one cassette out and another in.

The QMS 1060E Print System has two user-installable media-input configurations.

	**Standard** Uses the lower cassette and the multipurpose tray for a total media-feed capacity of 650 sheets. The standard printer configuration consists of the printer and the standard feeder (into which a cassette slides).
	**Dual cassette** Allows you to install two cassettes at once, increasing the total media-feed capacity to 1150 sheets (including the multipurpose tray). The dual-cassette printer configuration consists of the printer, the optional feeder, and the standard feeder (in this order). For this configuration you must purchase the optional feeder into which a cassette of of the desired size slides.

About the Optional Feeder

The optional feeder is the base into which a cassette slides as illustrated in the following sections. The optional feeder has a connector underneath that aligns with the pins on the top of the standard feeder. This is how the printer recognizes the third media source.

With the optional feeder you can install dual cassettes. The optional feeder

- Increases your printer's media feed capacity to 1150 sheets including the multipurpose tray.
- Allows you to load different sizes or colors of media and easily change between them by switching cassettes.
- Is easy to install. The optional feeder is stacked between the printer and the standard feeder, so no extra space is necessary.

Unpacking the Optional Feeder

Remove the packing materials that protect the optional feeder during shipment as follows:

1 **Take the feeder from the shipping carton and place it on a flat surface.**

2 **Remove any tape and packing material from the feeder.**

3 **Save the packing material in case you ever have to move or ship the feeder to a new location.**

Installing the Optional Feeder

▲ **Caution***: Turn off the printer before installing the optional feeder.*

Install the optional feeder as follows:

1 **Turn the printer off, disconnect the power cord, and all printer interface cables.**

WARNING! *Remember that the feeders (standard and optional) on the bottom of the printer stack are not attached to the printer. Make sure you lift the printer by the carrying grips on the bottom-most feeder in the stack. If the printer is lifted alone, the bottom feeders could fall off, causing bodily injury or damage to the printer. If you need to lift just the printer, use the grips on it and make sure it detaches completely from the feeder below before moving it to the side.*

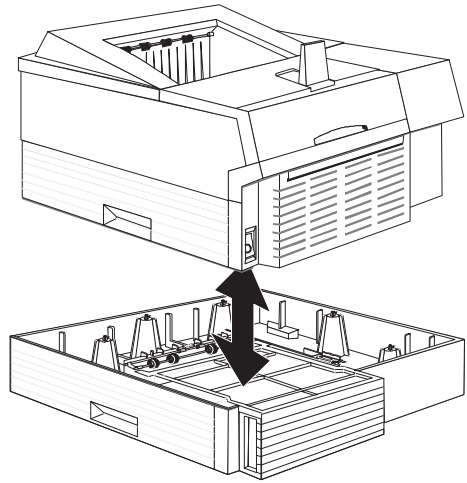
ACHTUNG! *Bitte beachten Sie, daß die Papierzuführungen unterhalb des Druckers nicht fest mit dem Drucker verbunden sind. Wenn Sie das gasamte Gerät hochheben wollen, greifen Sie deshalb in die Griffmulden der untersten Papierzuführung. Wenn Sie nur den Drucker hochheben, kann es sein, daß die Papierzuführung sich löst und herunterfällt. Dabei können Sie sich verletzen und der Drucker kann beschädigt werden. Deshalb versichern Sie sich, daß die Papierzuführung nicht mehr mit dem Drucker verbunden ist bevor Sie diesen Drucker an einen anderen Platz stellen. Benutzen Sie unbedingt die Griffmulden am Drucker, wenn Sie ihn transportieren wollen.*

1 Remove the printer from the standard feeder.

WARNING! *The printer is heay, so two people should lift it.*

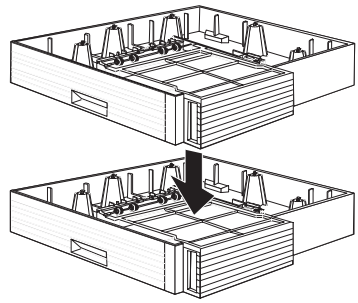
ACHTUNG! *Enternen Sie den Netzstecker und lassen Sie die Heizung abkühlen, bevor Sie den Drucker reinigen.*

Lift the printer off of the standard feeder by the carrying grips located on the printer's sides and place it on a flat surface.



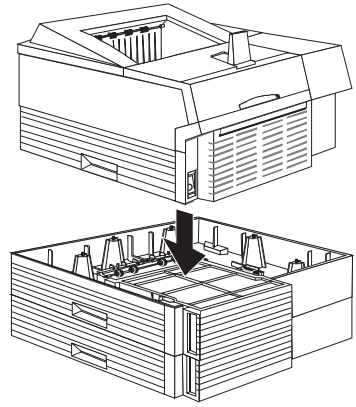
2 Stack the optional feeder on the standard feeder.

Ensure that the two feeders are securely stacked.



3 Set the printer on the optional feeder.

Lift the printer by the carrying grips located on its sides, align the printer over the pins on the optional feeder, and set the printer down on the optional feeder so that the three positioning posts on the optional feeder fit into the holes on the printer's bottom. Ensure that the printer and the optional paper feeder are securely seated.



4 Reconnect the interface cables, plug in the power cord, and turn the printer back on.

If you experience problems, check the order of the paper feeders in the stack, making sure that the optional paper feeder's connector is correctly aligned with the pins on top of the standard paper feeder.

Loading the Optional Media Cassette

Follow the directions in the "Loading the 500-Sheet Cassette" section in chapter 2, "Consumables," of the *Operation* guide.

Loading the Optional Envelope Cassette

With the optional envelope cassette, that is available for purchase from your QMS vendor, you can print up to 50 envelopes. This feeder lets you print mailing addresses on envelopes preprinted with logos or addresses. It even lets you print your own logo and return address along with the mailing addresses. Envelopes must meet the specifications listed in appendix B, "Technical Specifications." See appendix A, "QMS Customer Support," for information on QMS vendors.

Load the envelopes in the cassette as follows:

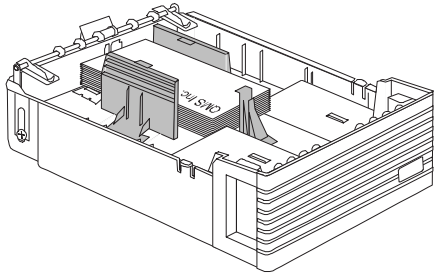
▲ **Caution***: Do not use envelopes with clasps, snaps, transparent windows, end-flaps, three or more layers on the left and right edges, coated linings, self-stick adhesives (peel and seal), or other synthetic materials. These type envelopes could damage your printer.*

» **Note:** *Before you load envelopes in the cassette, make sure that they are not stuck together, and that the leading edge (edge that feeds in the printer) is thin and well creased. You might try running a pen along the leading short-edge to flatten the stack before you insert it in the cassette.*

1 Slide the cassette out of the printer, if one is installed.

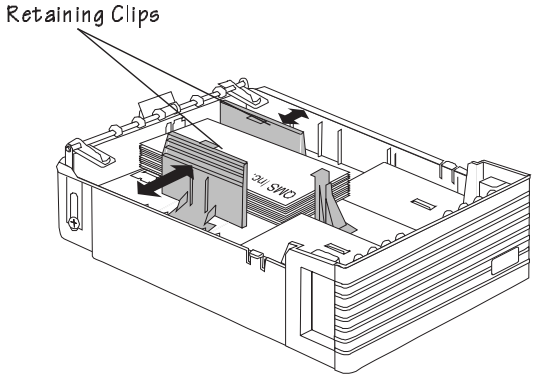
The envelope cassette is installed in place of a standard or an optional cassette in either of the media feeders.

2 Place up to 50 envelopes in the cassette short edge first with print-side (stamp-side) up so that the flap side aligns with the cassette's left envelope guide.



3 Adjust the envelope guides.

Push in on the envelope guides to adjust the stack. The guides move in, adjusting the stack in the center of the cassette. Ensure that the envelope stack lies flat, lightly touches the guides (is not buckled), and is positioned under the retaining clips on the guides.



4 Slide the envelope cassette back into the feeder as far as it will go.

Removing the Controller Board

The controller board must be removed to install a SIMM upgrade, an optional Intellifont SIMM, an optional hard disk, the Kanji Option Kit, or an optional network or LocalTalk interface:

WARNING! *The following options which require access to the controller board—SIMM upgrades, optional network interfaces, and optional hard disks—should be performed only by a qualified QMS service technician.*

ACHTUNG! *Arbeiten am QMS Controller (Speichererweiterung, Netzwerkschnittstelle und interne Festplatte) sollten nur von qualifiziertem Servicepersonal durchgeführt werden.*

Procedure

Use the following procedure to remove the controller board.

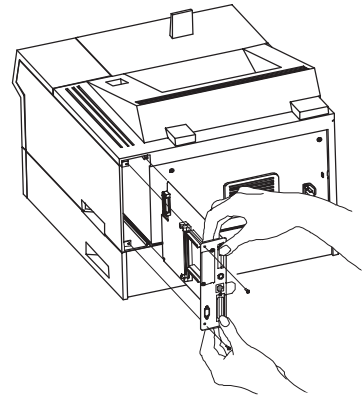
▲ **Caution***: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

1 **Turn off the printer, and then disconnect the power cord and all interface cables (parallel, serial, Ethernet, and the optional interface[s]) from the printer.**

2 Remove and set aside the two screws, one on each end of the metal mounting bracket cover on the rear of the printer.



3 Remove the controller board.

Using both hands, slide the controller board out of the printer and set it aside.

Reinstalling the Controller Board

The controller board must be reinstalled after installing a SIMM upgrade, an optional Intellifont SIMM, an optional hard disk, the Kanji Option Kit, or an optional network or LocalTalk interface.

WARNING! *The following options which require access to the controller board—SIMM upgrades, optional network interfaces, and optional hard disks—should be performed only by a qualified QMS service technician.*

ACHTUNG! *Arbeiten am QMS Controller (Speichererweiterung, Netzwerkschnittstelle und interne Festplatte) sollten nur von qualifiziertem Servicepersonal durchgeführt werden.*

Procedure

Use the following procedure to remove the controller board.

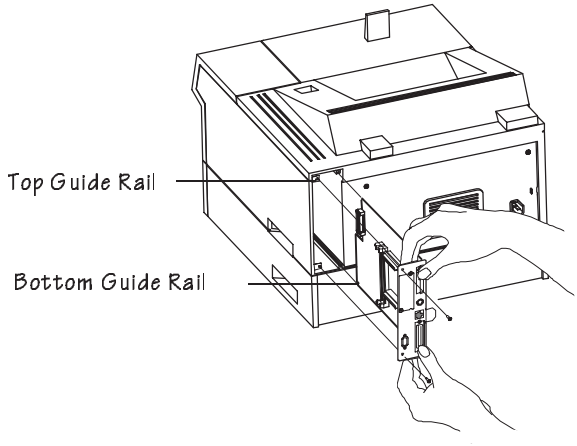
▲ **Caution***: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

1 **Replace the controller board in the printer.**

Lift the controller board and position it on the guide rails inside the printer so that the optional network interface ports are on the left-most edge of the rear of the printer.



» **Note:** *Align both the top and bottom guide rails, before sliding the board in the printer. Align the bottom guide rail first, and then align the top guide rail making sure that the board is aligned properly on both rails before sliding it into the printer.*

2 **Slide the controller board in until it is firmly seated in the printer.**

3 **Replace the 2 screws you removed earlier.**

4 **Reconnect all interface cables and the power cord, and then turn on the printer.**

Optional Fonts

The following types of optional fonts are available for the QMS 1060E Print System:

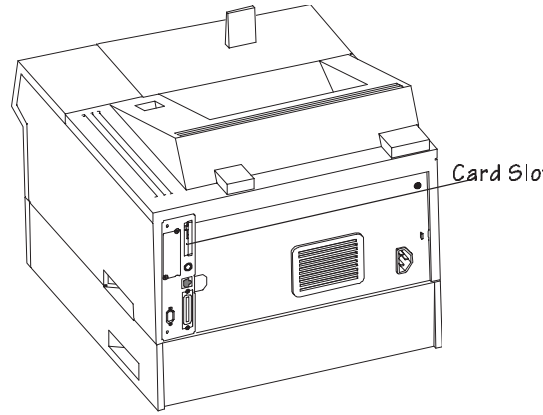
- A PCMCIA (Personal Computer Memory Card International Association) card containing typefaces (fonts) such as the ProCollection for the HP emulations on your printer or other special fonts.
- An Intellifont SIMM that increases the number of fonts available for the HP PCL 5 emulation from 20 to the 37 fonts available on a Hewlett-Packard LaserJet 4Si.
- A Kanji Option Kit that contains a pre-formatted IDE hard disk with Kanji fonts and other files.

Font Card

The printer supports one PCMCIA card (Release 1 and 2, Type I, II, and III) 37card.Keep in mind that some cards may require a RAM expansion to operate properly. For a complete list of available font cards, contact your QMS vendor. For more information on PCMCIA card slots, see chapter 5, “Additional Technical Information.”

» **Note:** *Your 1060E printer supports only QMS PCMCIA font cards. These PCMCIA font cards are backward compatible only with the previously released QMS 1060 and 1660 products. Font cards for previous QMS products are not compatible with your QMS 1060E.*

The card slot is located on the back right-hand side of the printer next to the optional interface port.



Using Font Cards

Typefaces (fonts), such as the ProCollection for the HP emulations on your printer and other special PostScript fonts, are contained on small printer circuit boards called cards. These cards can be plugged into your printer's PCMCIA card slot to provide additional functionality.

Procedure

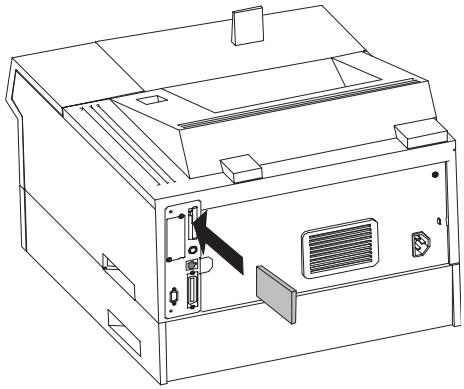
This procedure contains the font card instructions for your QMS 1060E printer. If your printer has a hard disk, you can install the font information from the card onto your hard disk. See "Installing an Optional Font," later in this chapter, for instructions.

1 If you are using a PCL ProCollection font card, turn off the printer.

Otherwise, press the Online/Offline key to take the printer off line. (The Ready indicator should be off.)

2 **With the label facing toward the optional interface port, insert the font card into the PCMCIA card slot.**

You should feel the card snap into place.



3 **Depending on the type of card you are installing, either turn on the printer again or press the Online/Offline key to put the printer back on line.**

The fonts are now ready to be used.

» **Note:** *If you're using a font card, you should also make sure that the printer driver you have installed for each application supports the fonts on the card. If it doesn't, contact your application manufacturer for support.*

Removing Font Card

Use the following procedure to remove a font card:

1 **If you are using a PCL ProCollection font card, turn off the printer.**

2 **Pull out the card gently.**

3 **Depending on the type of card you are removing, either turn on the printer again or put it back on line.**

Intellifont SIMM

An optional Intellifont SIMM increases the number of fonts available to the HP PCL 5 emulation on your printer from 20 to the 37 PCL 5 fonts available on a Hewlett-Packard LaserJet 4Si.

What's in the Intellifont Kit

Your Intellifont kit contains the following items:

- One anti-static wristband
- One SIMM

If anything is missing, call your QMS vendor.

The Installation Procedure

The installation procedure consists of the following steps:

1. **Access the controller board.**
2. **Install the SIMM.**
3. **Replace the controller board.**
4. **Increase the size of the printer's disk cache.**
5. **Verify that the fonts are available.**

Installing the Intellifont SIMM

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

▲ **Caution***: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

Handle the SIMM carefully and preferably by the edges only.

Access the printer controller board.

1 Use the instructions in the “Removing the Controller Board” section, earlier in this chapter.

Install the Intellifont SIMM

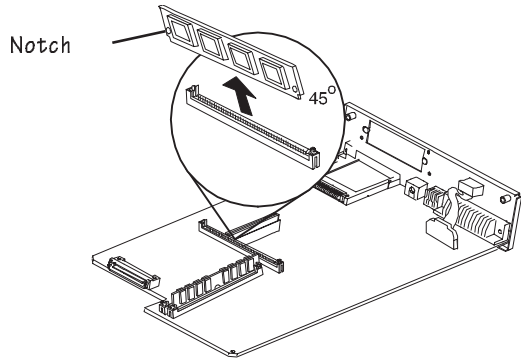
Position the Controller Board

1 Position the controller board so the interface panel is on your right.

2 Remove the SIMM from the anti-static bag.

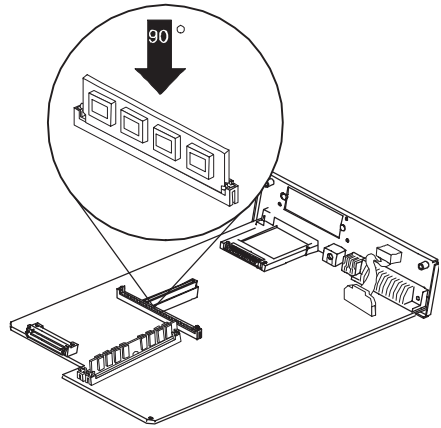
3 Insert the SIMM into the SIMM connector.

Hold the SIMM at a 45° angle to the controller board, with the notch on the left side. Slide the SIMM into the Intellifont SIMM connector, and then push gently on it to seat it securely in the connector.



4 Snap the SIMM into place.

When seated, the SIMM stands upright, firmly in place. If you cannot snap the SIMM into place, do not force it. Reposition it, making sure that the bottom of the SIMM is seated completely in the connector.



Replace the Controller Board

1 Insert the controller board in the printer.

Use the instructions in the “Reinstalling Controller Board” section of this chapter.

Increasing the Disk Cache Size

To use the Intellifont fonts with your printer’s standard 8 MB of RAM you must do one of the following:

- Set the Administration/Memory/Disk Cache client to 48 KB.

▲ **Caution:** *The factory default for this memory client is 48 KB. If this default has been changed to a value less than 48 KB, you may need to decrease one of the other memory clients before increasing the Disk Cache client. This option should be used only by individuals who are familiar with adjusting memory settings. Incorrect use of this option could cause your system to operate incorrectly.*

- If your printer has an optional hard disk, and if Administration/ Memory/Enable Disk Swap is set to On, then any extra memory is distibuted to all memory clients.
- Add more printer memory which automatically increases the Disk Cache client's memory setting. See "Single In-Line Memory Modules," later in this chapter for information on installing additional memory.

If your printer has more memory than 8 MB of RAM , the size of the disk cache is adequate.

Verifying the Installation

Once you have installed the Intellifont SIMM, print a start-up page and an advanced status page to verify the installation.

1 **Wait for the printer message window to display `IDLE`.**

2 **If necessary, use the Administration/Startup Options/Startup Page menu to enable start-up pages.**

3 Turn the printer off and back on again.

In the Options section of the start-up page, the following appears:

```
%cartridge1%
%cartridge%
```

» **Note:** *Two cartridges appear even though only one is installed.*

4 If necessary, use the Administration/Special Pages/Status Page Type menu to change the default Standard setting to Advanced.

5 Press the Status Page key to print an advanced status page.

The list of HP PCL fonts includes all of the new Intellifont fonts. Keep this status page for reference when accessing these fonts.

Font List

The following 37 fonts are now available for use. They can be automatically rotated to landscape orientation. All fonts are scalable and available in 35 symbol sets unless otherwise noted.

Font	Pi/ Symbol	Sans Serif	Script	Serif
Albertus Semi Bold Albertus Extra Bold		✓ ✓		
Antique Olive Medium Antique Olive Italic Medium Antique Olive Bold		✓ ✓ ✓		
Clarendon Condensed Bold				✓
Coronet Italic Medium			✓	
Courier Medium Courier Italic Medium Courier Bold Courier Italic Bold				✓ ✓ ✓ ✓

Font	Pi/ Symbol	Sans Serif	Script	Serif
Garamond (Stempel) Medium Garamond (Stempel) Italic Medium Garamond (Stempel) Bold Garamond (Stempel) Italic Bold				✓ ✓ ✓ ✓
ITC Zapf Dingbats (1 symbol set)	✓			
Letter Gothic Medium Letter Gothic Italic Medium Letter Gothic Bold		✓ ✓ ✓		
Line Printer (16.66 pitch, 8.5 points, 25 symbol sets)		✓		
Coronet Italic Medium			✓	
Omega Medium Omega Italic Medium Omega Bold Omega Italic Bold		✓ ✓ ✓ ✓		
Times Roman Medium Times Roman Italic Medium Times Roman Bold Times Roman Italic Bold				✓ ✓ ✓ ✓
Univers Medium Univers Italic Medium Univers Bold Univers Italic Bold		✓ ✓ ✓ ✓		
Univers Condensed Medium Univers Condensed Italic Medium Univers Condensed Bold Univers Condensed Italic Bold		✓ ✓ ✓ ✓		

Accessing the Fonts

Using Your PCL Application

Use your PCL application to set the font for a single document. See your application documentation for information.

Using the Printer Configuration Menu

Use the printer configuration menu to set the default font for all PCL documents.

» **Note:** *Before beginning this procedure, you must have a PCL 5 font list from the advanced status page. See steps 4 and 5 of "Verify the Installation," above, for information on printing an advanced status page.*

1. **Access the Administation/PCL5/Default Font menu.**
2. **Choose the Select by Index option.**
3. **Access the Administration/PCL5/Default Font Idx menu.**
4. **Identify the appropriate font selection index.**

   The font selection indexes are listed in the PCL 5 font list on the advanced status page.
5. **Save your changes and put the printer back on line.**

Kanji Option Kit

The following steps are involved in setting up and using the Kanji fonts:

1. **Installing IDE-SCSI board and IDE hard disk.**
2. **Configuring the printer for Kanji.**

3 Accessing the Kanji fonts.

This kit contains a preformatted internal IDE hard disk with the Kanji fonts installed.

» **Note:** *Before installing this kit, you must have an optional IDE-SCSI board. The optional IDE-SCSI (Integrated Drive Electronics-Small Computer System Interface) board supports the Kanji internal IDE hard disk and up to three external SCSI hard disks.*

Installing IDE-SCSI Board and IDE Hard Disk

For this installation, the controller board is removed and the Kanji internal IDE hard disk is mounted on an IDE-SCSI board. Then they are both installed in the printer. The “IDE-SCSI Board” section, later in this chapter, contains the detailed steps for installing the board. This procedure refers you to other procedures, when necessary, for installing the IDE hard disk.

Configuring the Printer for Kanji

You need to reconfigure the printer’s memory in order to access the Kanji fonts. The instructions for reconfiguring the memory comes in your Kanji Option Kit. See the “Configuring the Printer” section of those instructions, for details on modifying the minimum Kanji memory settings listed in the following section.

Minimum Kanji Memory Settings

Memory Client	Minimum Kanji Setting
K Mem for Spool	112
K Mem for PSHeap	3584
K Mem for PS Fonts	496
K Mem Emulation	768
K Mem Emul Temp	256
K Mem Display	512
K Mem Disk Cache	256

Accessing the Kanji Fonts

Follow the instructions in the “Accessing the Kanji Fonts” section of the documentation that comes with the Kanji Option Kit.

Security Cards

Using Security Cards

The security card allows the Operator Control and Administration menus to be password protected, so that only users who know the password can change printer configuration values. When a security card is installed, the Installation menu appears in the printer's configuration menu. See chapter 4, “Printer Configuration,” for complete configuration menu information.

▲ **Caution***: The printer must be off line (the Ready indicator must be off) before you insert or remove a security card. Press the Online/Offline key once to take the printer off line. If you forget to take the printer off line before you insert or remove a security card, turn the printer off and back on again to regain access to the data stored in the printer's memory.*

A security card uses the same PCMCIA slot as a font card. The card slot is located on the back of the printer next to the optional I/O port.

Procedure

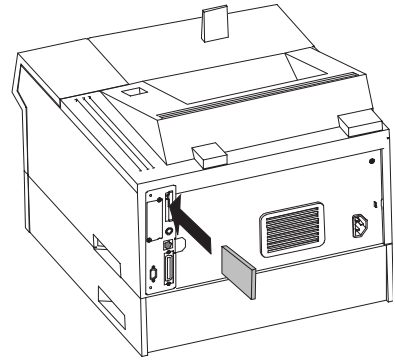
Use a security card as follows:

1 **Take the printer off line.**

The Ready indicator must be off.

2 **With the label facing the optional network interface port, insert the security card into the PCMCIA card slot.**

You should feel the card snap into place.



3 Access the Installation menu.

a Press the Menu key and the CONFIGURATION menu displays for 1.5 seconds, then the ADMINISTRATION menu displays.

b Press the Previous or Next key to display the INSTALLATION menu.

c Then press the Select key and the first Installation menu option displays.

d Press the Previous or Next key to advance to the preferred Installation menu option.

4 Select the password.

Use the Installation menu to password-protect the Operator Control and Administration menus. The Installation menu appears only when an optional security card is installed in your printer.

Menu	Installation/Operator Passwrd Installation/Admin Password
Choices	Up to 16 characters (any letter, number, or symbol)
Default	Blank (no password)

Notes	Enable the passwords in the Installation/Use Passwrd and Installation/Use Admin Pwd menus. The passwords for these two menus can be the same or different. It is case sensitive and is entered like an alphanumeric string. If you choose a password that is not 16 characters long, press the Select key until you get to the left-most character of the password field. Enter the password character string the same as you would enter an alphanumeric string, see chapter 4, “Printer Configuration,” for complete information on how to enter alphanumeric characters.

5 Enable the password.

Use the Installation menu to enable the passwords.

Menu	Installation/Use Operator Pwd Installation/Use Admin Pwd
Choices	On, Off On—Requires the correct password to access to the Administration and/or Operator Control menus. Off—Does not require a password to access the Administration and/or Operator Control menus.
Default	Off
Notes	Enter the passwords in the Installation/Operator Passwrd and Installation/Admin Password menus.

6 Return to the Configuration menu.

From the control panel press the Menu key.

7 Save the password changes.

When SAVE CHANGES displays, press the Next key to change the option to Yes, then press the Select key to save the password changes.

8 Remove the security card from the PCMCIA card slot and put it in a secure location.

9 Put the printer back on line.

After you exit from the menu and take the card out, the Installation menu is removed from the control panel message window.

Using Passwords

- When a password is required to enter the Operator Control or Administration menu, the message window displays

  ```
  ENTER PASSWORD
  ```

  when you use the Select key to enter the menu. Enter the password or press the Menu key to return to the menu. Chapter 4, "Printer Configuration," has complete information on using the configuration menu and on selecting alphanumeric characters.

- If an invalid password is entered, the message window flashes

  ```
  INVALID PASSWORD
  ```

  for three seconds and then returns you to the Configuration menu. If you specify the correct password, the selected menu displays.

  If you forget the password, it can be recovered by the system administrator as follows:

1 Take the printer offline

The Ready indicator must be off.

2 With the label facing toward the optional interface port, insert the security card into the PCMCIA card slot.

You should feel the card snap into place.

3 Access the Installation menu.

a Press the Menu key and the CONFIGURATION menu displays for 1.5 seconds, then the ADMINISTRATION menu displays.

b Press the Previous or Next key to display the INSTALLATION menu.

c Then press the Select key and the first Installation menu option displays.

d Press the Previous or Next key to advance to the preferred Installation menu option.

4 Select either the Operator Passwrd or the Admin Password option and view the old password.

If you need to change the password, enter the new password as follows:

Menu	Installation/Operator Passwrd Installation/Admin Password
Choices	Up to 16 characters (any letter, number, or symbol)
Default	Blank (no password)
Notes	The passwords for these two menus can be the same or different. It is case sensitive and is entered like an alphanumeric string. If you choose a password that is not 16 characters long, press the Select key until you get to the left-most character of the password field. Enter the password character string the same as you would enter an alphanumeric string. (See chapter 4, “Printer Configuration,” for complete information on how to enter alphanumeric characters.)

Downloading an Emulation

Optional emulations, such as LN03 and QUIC II, are available as PostScript files on floppy disks for your PC. See your QMS vendor for the available optional emulations. This section describes how to download an optional emulation from the floppy disk to the printer’s hard disk.

» **Note:** *At least one optional hard disk (internal or external) must be installed on the printer before you can download an emulation. If more than one hard disk is available, the emulation automatically installs itself on the disk with the most free storage space.*

Once an emulation is downloaded, the only way to remove it is to reformat the hard disk (Administration/Disk Operations/Format Disk menu or the PS Executive Series Utilities.

Procedure

1 **If necessary connect the PC to the printer's parallel or serial port.**

2 **Turn on the printer, and wait for `IDLE` to appear in the message window.**

3 **Insert the emulation disk in your PC's 3.5" disk drive, and change to that drive (for example, if you're using the A drive, type a:↵).**

4 **Send the emulation to the printer's hard disk.**

- If your PC and printer are connected through the parallel port, type

  ```
  copy /b *.ps lpt#↵
  ```

  where # is 1 to 3. (/b refers to binary files.)

- If your PC and printer are connected through the serial port, type

  ```
  copy /b *.ps com#
  ```

  where # is 1 to 4. (/b refers to binary files.)

5 **When the downloading is complete, reboot the printer.**

The emulation is ready to be used.

Single In-Line Memory Modules

Single in-line memory modules (or SIMMs) are compact circuit boards with surface-mount memory chips. Your printer comes standard with one 8 MB SIMM, for a total of 8 MB of RAM. However, you can add up to a total of 64 MB of RAM.

Additional printer memory allows you to download more fonts and increase the printer's buffer (area where data sent from the computer is stored while it's waiting to be printed).

Installing a SIMM

WARNING! *Turn off the printer and unplug the power cord before removing the printer's controller board.*

ACHTUNG! *Schalten Sie unbedingt den Drucker aus und ziehen Sie den Netzstecker bevor Sie den Controller aus dem Drucker nehmen.*

Caution*: It's very important to protect the printer controller board from electrostatic damage while performing this SIMM installation. Handle the SIMM carefully and preferably by the edges only.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

SIMMs are installed as follows:

1 Access the printer controller board.

Use the instructions in the “Removing the Controller Board” section earlier in this chapter.

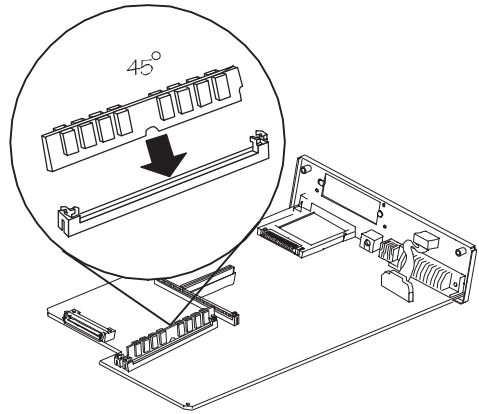
2 **Position the controller board on a flat surface so the controller board lies flat and the controller board handle hangs over the edge of the flat surface.**

3 **Remove the SIMM from the anti-static bag.**

4 **Insert the SIMM into the SIMM connector.**

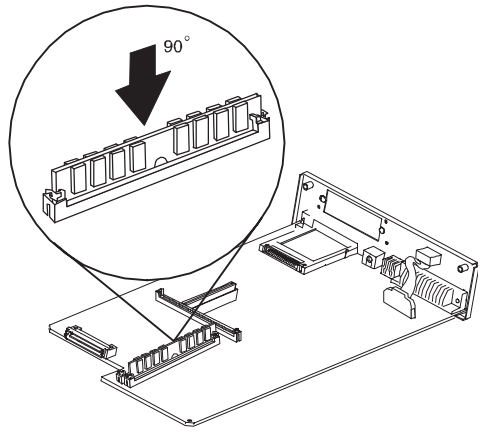
Hold the SIMM at a 45° angle to the controller board, with the notch on the left side. Slide the SIMM into either SIMM connector, and then push gently on it to make sure it is securely seated in the connector.

» **Note:** *You can insert a SIMM in either SIMM connector as long as DRAM0, the SIMM connector closest to you, is occupied.*



5 Tilt the SIMM up to a 90° angle until you feel it snap into place.

When seated, the SIMM stands upright, firmly in place. If you cannot snap the SIMM into place, do not force it. Reposition it, making sure that the bottom of the SIMM is seated completely in the connector.



6 Repeat steps 3-5 for each additional SIMM being installing.

7 Insert the controller board in the printer.

Use the instructions in the “Reinstalling Controller Board” section, earlier in this chapter.

Removing a SIMM

If both of the SIMM connectors are filled and you want to install more memory (for example, if you want to replace a 4 MB SIMM with an 8 MB SIMM), one SIMM must be removed before a larger SIMM can be installed. Then refer to the previous section, “Installing a SIMM,” for installation instructions. A SIMM can be removed from and installed in either SIMM connector as long as DRAM0, the SIMM connector closest to you, is occupied. Also, you must make sure that there is a total of at least 8 MB of RAM installed.

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

Caution*: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself. Handle the SIMM carefully and preferably by the edges only.*

Remove a SIMM as follows:

1 **Access the printer controller board.**

Use the instructions in the “Removing the Printer and Controller Board Covers” section, earlier in this chapter.

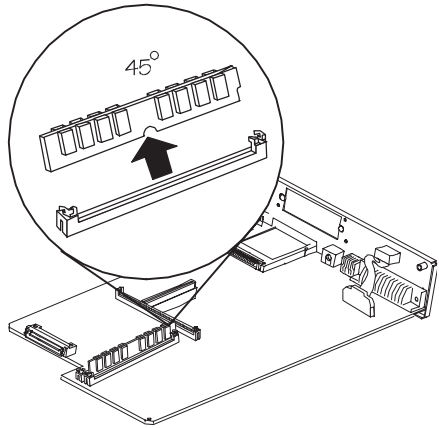
2 **Position the controller board on a flat surface so that the controller board lies flat and its handle hangs over the edge of the flat surface.**

3 Release the SIMM.

Pull the latches on each side of the SIMM connector outward using both thumbs.

4 Remove the SIMM.

Tilt the SIMM backwards to a 45° angle away from the SIMM connector, and then lift it out.



5 If you want to install a SIMM, refer to “Installing a SIMM,” earlier in this section, otherwise continue at step 6.

6 Reinsert the controller board in the printer.

Use the instructions in the “Reinstalling the Controller Board” section, earlier in this chapter.

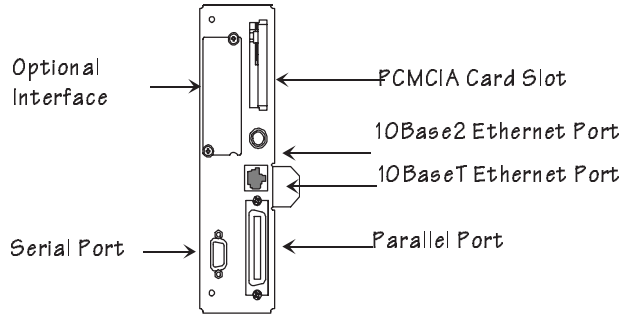
Ethernet or Token-Ring Network Interface

In addition to the three standard interfaces—parallel, serial, and Ethernet—the QMS 1060E Print System supports an optional Ethernet network, Token-Ring network, LocalTalk network, or a single Macintosh interface.

» **Note:** *The LocalTalk network or single Macintosh interface information is contained in the "Using the Optional LocalTalk Interface" section, later in this chapter.*

This additional network interface allows greater flexibility when working in a complex network environment.

An optional network interface may be installed in the optional interface opening on the back of the printer. This opening is to the left of the other interface ports and it is covered with a rectangular metal plate.



The printer's simultaneous interface operation (SIO) allows the optional interfaces to be active at the same time as the other ports. In other words, your printer can communicate through up to five ports with five host computers or computer networks. One host can interface through the parallel port, one through the serial port, one through the Ethernet port, and one through the optional interface port. See

your QMS vendor for a list of available optional network interfaces available.

Optional Network Interface Assembly Kit

The optional network interface assembly kit includes the following:

- A network interface card
- Network interface documentation

The kit may also include additional parts not required for network interface installation on this printer.

» **Note:** *A Phillips screwdriver is needed for this procedure.*

Installing an Optional Network Interface

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

▲ **Caution***: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

1 **Turn off the printer, and then disconnect the power cord and all interface cables (parallel, serial, and Ethernet) from the printer.**

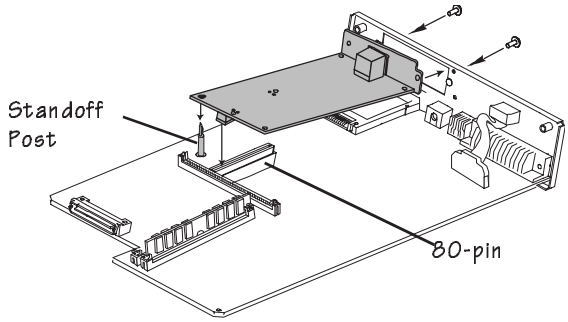
2 **Access the printer controller board.**

Use the instructions in the “Removing the Controller Board” section, earlier in this chapter.

3 **Remove the two screws from the optional interface plate.**

Save the two screws. (You’ll use them when you install the optional interface card.) You can either save or discard the plate.

4 Attach the NIC



a Position the network interface card (NIC) so the port slides into the opening you just created.

b Snap the NIC onto the 80-pin connector on the controller board.

c Press down on the board gently until it is secured by the 80-pin connector and by the plastic standoff post.

5 Replace the controller board.

Use the instructions in the “Reinstalling the Controller Board” section, earlier in this chapter.

6 Secure the NIC to the printer with the two screws you removed earlier.

7 Reconnect all interface cables and the power cord, and then turn on the printer.

Using an Optional Network Interface

Once an optional network interface is installed, refer to the following for more information:

- Chapter 4, “Connecting to an Ethernet Network”, provides information on connecting to the network, installing the software, and configuring the interface and the network. Chapter 2, “Printer Configuration,” of *QMS CrownNet Interface System Administrator’s Guide*, provides information on setting the Ethernet interface parameters. Chapter 5, “Additional Technical Information,” of this manual contains a full discussion of the PS Protocol option that appears in the Administration/ Communications/CrownNet menu.
- The documentation that comes with the optional network interface contains information about all other options in the new network interface menu as well as instructions for connecting the printer to the network and for printing over the network.
- Your application and network documentation contain information on printing over the network.

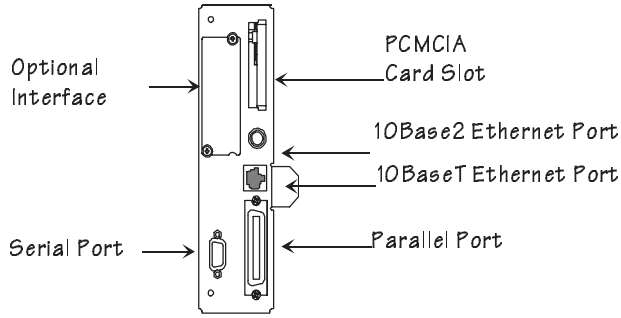
Setting Optional Interface Parameters

If you install an optional network interface such as EtherNet or Token-Ring, the appropriate interface and its options will be listed in the Administration/Communications/CrownNet menu. The documentation that comes with the interface contains complete configuration information.

Optional LocalTalk Interface

In addition to the three standard interfaces—parallel, serial, and Ethernet—the QMS 1060E Print System supports an optional Ethernet network, Token-Ring network, LocalTalk network, or a single Macintosh interface.

An optional interface may be installed in the optional interface opening on the back of the printer. This opening is to the left of the other interface ports and it is covered with a rectangular metal plate.



Optional LocalTalk Interface Assembly Kit

The optional network interface assembly kit includes the following:

- A LocalTalk interface card
- LocalTalk interface notice

The kit may also include additional parts not required for interface installation on this printer.

» **Note:** *A Phillips screwdriver is needed for this procedure.*

Installing an Optional LocalTalk Interface

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

▲ **Caution***: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

1 **Turn off the printer, and then disconnect the power cord and all interface cables (parallel, serial, and Ethernet) from the printer.**

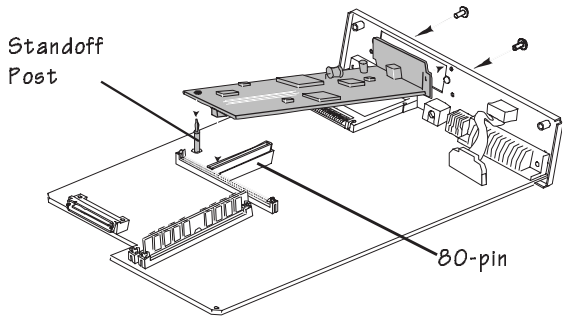
2 **Access the printer controller board.**

Use the instructions in the “Removing the Controller Board” section, earlier in this chapter.

3 **Remove the two screws from the optional interface plate.**

Save the two screws. (You’ll use them when you install the optional interface card.) You can either save or discard the plate.

4 Attach the LocalTalk Interface Card



a Position the LocalTalk interface card so the port slides into the opening you just created.

b Snap the LocalTalk interface card onto the 80-pin connector on the controller board.

c Press down on the board gently until it is secured by the 80-pin connector and by the plastic standoff post.

5 Replace the controller board.

Use the instructions in the “Reinstalling the Controller Board” section, earlier in this chapter.

6 Secure the LocalTalk interface card to the printer with the two screws you removed earlier.

7 Reconnect all interface cables and the power cord, and then turn on the printer.

Using the Optional LocalTalk Interface

Connecting to the optional LocalTalk interface involves basically three steps: assembling the proper interface cabling (use a LocalTalk-type kit such as Farallon's PhoneNET, available from your QMS vendor), making the connection, and making sure the necessary printing files are installed on the Macintosh.

The optional LocalTalk interface is used to print if

- Your host is any member of the Apple Macintosh family. The instructions in this chapter explain how to connect a Macintosh (via either a direct connection or through a LocalTalk network connection) to the QMS 1060E Print System.
- Your host is an IBM PC or compatible microcomputer, workstation, minicomputer, or mainframe computer that connects through a print network (such as AppleShare) using LocalTalk-type connectors and boxes.

  If you're connecting to a host such as these, you may need additional hardware or software. See your host or network documentation for details specific to your setup.

Interface

Interface is the point at which two elements connect so they can work together. Printer-host interface is the way a printer connects to and works with a host (for example, a microcomputer, minicomputer, mainframe computer, or a network), and it involves both hardware and software. The way your printer interfaces with a host depends on many things, including host type, host ports available, interface cabling, application software, printer emulations, and printer drivers.

Macintosh Interface Cabling

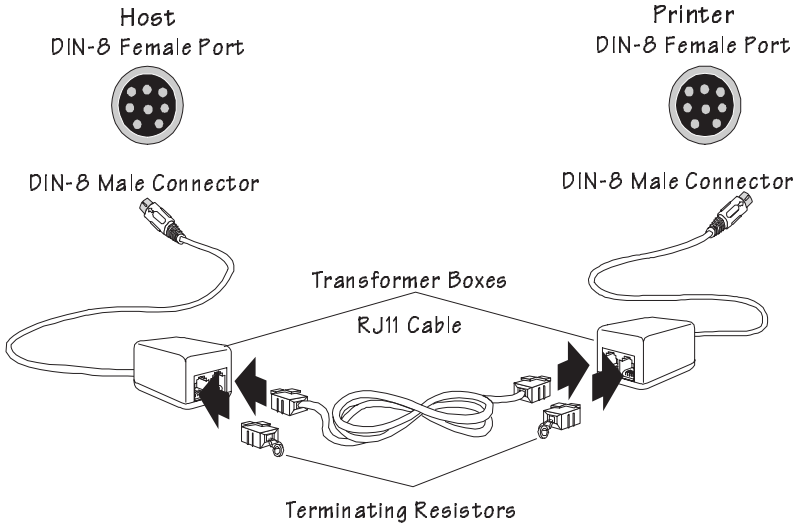
To connect your printer to a single Macintosh, you must have

» **Note:** *For cable pinout information, see appendix, B of this manual, the “Cable Pinouts” section,.*

- Two PhoneNET-type transformer boxes: one with a DIN-8 connector for the printer port and one with a DIN-8 connector for the Macintosh port
- An RJ11 (telephone) cable
- Two terminating resistors to close the open sockets left in the transformer boxes after the connection is made

If you’re replacing a printer already connected to a Macintosh, you probably already have this equipment.

If you’re connecting the printer to an AppleTalk network with more than one Macintosh, see your PhoneNET and Macintosh documentation for more information.



Making the Connection

Use the following procedure to connect your printer to the Macintosh.

▲ **Caution***: Turn off both the printer and the Macintosh before making the connection.*

1. **Plug the connector from one transformer box into the printer's LocalTalk port.**
2. **Plug the connector from the other transformer box into the Macintosh printer port.**
3. **Connect the two transformer boxes with the telephone cable.**
4. **Put terminating resistors in all open sockets in the connector boxes.**

   This ensures proper communication and helps speed up transmission.
5. **Turn on the printer.**

   A start-up page should print if it has not been disabled.

Macintosh Printing Software

If your Macintosh was previously connected to a PostScript printer, you can probably start printing now with the printing software already in place. Refer to your application documentation for instructions on sending a document to the printer.

However, if you want to use all of your printer's special features (like collation, 600x600 dpi printing, and gamma correction), **or** if you've never printed to a PostScript printer before, you need to take a few minutes to make sure you have the following printing software installed:

- PS Executive Series Utilities
- The 1060 PPD file
- Application-specific printer files

Installing PS Executive Series Printer Utilities

The PS Executive Series Utilities (or PS Exec), included on the Macintosh-format disks we shipped with your printer, is a utilities program for controlling the printer from the Macintosh. For example, through PS Exec you can turn off the start-up page, rename the printer, install printer-resident screen fonts, download fonts, print font samples, and manage hard disks. Many of the procedures described in this manual involve using PS Exec.

1 **With the Macintosh on, insert the Macintosh Format PS Executive Series Utilities disk in the disk drive.**

2 **Double-click the PSExec3.*xx* Installer icon.**

3 **In the PSExec 3.*x* dialog box that appears, verify the Install Location.**

To change the Install Location you can either use the drop-down list box to display and select the appropriate disk, or you can choose the Switch Disk button to scroll through the available disks.

4 **Also in the PSEXEC 3.*x* dialog box, choose Easy Install or Custom install.**

- **Easy Install** automatically installs all of the utilities, including the PS Exec application; the LaserWriter 8.*x* driver; the PDF, PDX, and PPD files; and the screen fonts.
- **Custom Install** allows you to choose the options you want to install.

  The amount of available space on your Macintosh hard disk and the amount of space necessary for all of the selected options are indicated near the bottom of the window.

» **Note:** *If you're using Custom Install, you can click the small icon (it looks like an* `I` *inside a square) to the right of each option for more information about that install option.*

5 **Click Install to begin the installation.**

The installation takes approximately one minute. The Installer places the LaserWriter 8.*x* driver in the Extensions folder inside

the System Folder and all of the other options inside a newly created PSExec 3.*xƒ* folder in the hard disk window. Also inside this folder is the Installer log file, which you can view to verify the installation.

» **Note:** *All Macintosh users on a network must use the same version of the LaserWriter and Laser Prep files to run correctly. For example, if the network has a mixture of LaserWriter 6.x, 7.x, and/or 8.x, the printer will experience frequent reinitialization problems. To check the version number, select the LaserWriter icon and then hold down the Command key and press the* I *key. The driver version number appears in the Info window on the second to last line. LaserWriter 7.x and 8.x do not require a Laser Prep file to work correctly with your printer. The Laser Prep information is located within the LaserWriter driver itself.*

6 When the installation is finished, you are prompted to choose Continue to install additional options from the Custom installation option or to choose Quit to exit the Installer program.

» **Note:** *The Easy Install procedure automatically installs the Version 4.*x *PPDs but not the Version 3.0 PPDs. If you want to install them, you can do so now as a Custom installation. Return to step 4.*

7 Back at the hard disk window, open the new PSExec 3.*x ƒ* folder and then, inside that, the PS Exec *ƒ* folder.

8 Open PSInstall to personalize your copy of PS Exec.

9 Check the README file(s) for updates, and see the PS Exec on-line help for information on using the utility.

Installing the QMS 1060 4.1 PPD

The QMS 1060 Print System 4.1 PPD (a printer description file) allows you to take advantage of printer-features like multiple-resolution printing and collation that are not available through LaserWriter 8.*x* alone.

» **Note:** *If you have problems printing with LaserWriter 8.x, reinstall the LaserWriter 7.x driver that came with your Macintosh (if available), or call the QMS Customer Response Center (CRC). See appendix A, "QMS Customer Support," for a list of telephone numbers.*

1 **If you haven't already, follow the instructions given above in "Installing PS Executive Series Printer Utilities."**

2 **If necessary, create a Printer Descriptions folder:**

System 7 users—Create a folder called Printer Descriptions inside the Extensions folder inside the System Folder.

System 6 users—Create a folder called Printer Descriptions inside the System Folder.

3 **Open the 4.1 PPDs folder inside the PSExec 3.*xx f* Folder.**

4 **Select the QMS 1060 Print System PDF, and drag it to the Printer Descriptions folder.**

5 **From the Apple menu, choose Chooser.**

6 **In the Chooser window, select the LaserWriter 8.*x* icon and select QMS 1060.**

7 **Choose the Setup button.**

This causes the LaserWriter to query the printer and automatically choose the appropriate PPD.

8 **Exit from the Chooser.**

Now, when you open your application, you can access QMS printing options by choosing Options in your application's Print dialog box. Choose Help in the Options dialog box for information on these options.

Installing Application-Specific Printer Files

If you plan to print from Aldus PageMaker, Aldus FreeHand, Aldus PrePrint, Adobe Separator, or QuarkXPress, you'll also want to install the latest printer description file (PPD, PDX, or PDF) for your particular software. You can probably print without this file, but you may not

be able to access all of your printer's features, and you may get an error message telling you to change the printer name.

» **Note:** *The application (PageMaker, FreeHand, PrePrint, Separator, or QuarkXPress) should be installed before you install the printer description file(s).*

1 **If you haven't already, follow the instructions given above in "Installing PS Executive Series Printer Utilities."**

2 **Install the appropriate printer description file(s) for your application from 4.1 PPDs, PDFs, or PDXs folder in the PSExec 3.*xf* folder:**

- **If you use Adobe Separator,** install the PPD file. Your Separator documentation explains where to put it.
- **If you use QuarkXPress,** install the PDF in the same folder as QuarkXPress. Check your QuarkXPress documentation for details.
- **If you use Adobe PageMaker 5.*x*,** install the version 4.1 PPD in the Printer Descriptions folder.
- **If you use Aldus PageMaker 4.*x*,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.
- **If you use Aldus FreeHand 4.*x*,** install the version 4.1 PPD in the Printer Descriptions folder.
- **If you use Aldus FreeHand 3.*x*,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.

» **Note:** *Version 3 PPDs are not installed automatically through the PS Exec Easy Install procedure. You must use the Custom Install procedure. Refer to the PS Exec installation instructions at the very beginning of this section.*

- **If you use Aldus PrePrint,** install the version 3.0 PPD and PDX files in the PPDs folder in the Aldus folder in the System Folder.

» **Note:** *Version 3 PPDs are not installed automatically through the PS Exec Easy Install procedure. You must use the Custom Install procedure. Refer to the PS Exec installation instructions at the very beginning of this section.*

- **If you use QuarkXPress**, install the QMS 1060 and 1060E PDFs in the same folder as QuarkXPress. While QuarkXPress 3.3 allows you to access either PDFs or PPDs, to have access to all of your printer's features, you should use the PDF. To select the PDFs, go to the Page Setup dialog box in QuarkXPress, and hold down the Shift key while clicking the Printer Type list box. (The italicized selections are PPDs, and the non-italicized selections are PDFs.) See your QuarkXPress documentation for more information.

» **Note:** *The 1060E PDF allows you to choose between Basic and Enhanced (Advanced) Halftoning in QuarkXPress. If this PDF is not present, you won't be able to used Enhanced Halftoning even though the printer supports it. See chapter 5, "Additional Technical Information," in the Reference for more information on halftones.*

Testing Macintosh Communication

You can check communication between the printer selected in the Chooser and the Macintosh by sending a file to the printer from an application (see your application documentation for more information) or by printing a directory, as described here:

1 Display a disk or folder window.

2 Set up page information.

Choose Page Setup from the File menu. Select paper size, printing orientation, and any other necessary options. Then select OK.

3 Print a directory or a window.

a Choose Print Directory or Print Window from the File menu. A dialog box appears.

b Select the printing options you want; then click OK. If no page prints, check chapter 6, “Troubleshooting,” of the *Operation* guide.

Printing from the Macintosh

You're now ready to print from your Macintosh. From this point, you'll probably perform most printing tasks from your application. For specific information, check the printing section in your application documentation.

For information on print media types and sizes, see chapter 2, “Print Media,” in the *Reference* guide.

A Note for Users of Aldus Applications

If you use an Aldus application (or one that used to be owned by Aldus, such as Adobe PageMaker or MacroMedia FreeHand), when you want to print, hold down the Option key while selecting Print from the File menu. This brings up the LaserWriter windows, which contains the QMS printing options. Normally, Aldus applications bypass LaserWriter and use an Aldus printer driver, which prevents you from accessing QMS printing options.

A Note for Users of Adobe PhotoShop

If you use Adobe PhotoShop, go to PhotoShop’s Page Setup dialog box, and select Use Printer’s Default Screen under the Screens option. This allows your choices in the QMS driver to take effect.

Setting LocalTalk Interface Parameters

Use the Administration/Communications/LocalTalk menu to set the LocalTalk interface values used for printer-host communication.

Mode

Enables or disables the communication interface.

Menu	Administration/Communications/LocalTalk/Mode
Choices	Enabled—Establishes one-way LocalTalk communication from the host to the printer. Disabled—Turns off the LocalTalk interface, and the printer stops accepting LocalTalk interface print jobs.
Default	Enabled
Notes	The printer must be restarted for changes to the Mode menu to take effect. Changing the Mode setting will cause the REBOOT NOW? prompt to appear. Your can either choose to restart the printer now and this change takes effect immediately or you can manually restart the printer and have this change take effect later.

Min K Spool

Sets the minimum number of kilobytes of system memory allocated to theLocalTalk interface.

Menu	Administration/Communications/LocalTalk/Min K Spool
Choices	00000-99999
Default	00015
Notes	This value must be less than K Mem For Spool (Administration/Memory menu). A 00000 value does not turn off the spooling buffer for the LocalTalk interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization. The printer is immediately restarted when a change is made to this option. (For example, change the value to 35, press the Select key, and the menu changes to LocalTalk. Press the Online/Offline key and the printer automatically reboots.)

Connection

Allows you to enable or disable print spooling.

Menu	Administration/Communications/LocalTalk/Connection
Choices	Conventional—Allows one LocalTalk connection and accepts only one print job at a time. If two users send print jobs to the printer, the workstation belonging to the first user is unavailable until the first job has been printed, and the workstation belonging to the second user is unavailable until both jobs have been printed. Spool—Allows multiple LocalTalk connections and accepts (spools) more than one print job at a time. Workstations are available while jobs are printing. Both—Allows both single and multiple LocalTalk connections.
Default	Conventional

PS Protocol

Sets the binary communication protocol (BCP) for communicating over a LocalTalk interface to a PostScript printer. See chapter 5, “Additional Technical Information,” for a full discussion of PS Protocol.

Menu	Administration/Communications/LocalTalk/PS Protocol
Choices	Normal—Enable standard, ASCII hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can alter the PS protocol value through PostScript operators. Normal Fixed—Enable standard, ASCII hex protocol. Print jobs cannot alter this value through PostScript operators. Binary—Enable binary communication protocol. Print jobs can alter this value through PostScript operators. Data in the printable ASCII range also prints. Binary Fixed—Enable binary communication protocol. Print jobs can not alter this value through PostScript operators. Data in the printable ASCII range also prints.
Default	Normal

Def Job Prio

Allows you to specify which jobs are printed first, according to the interface through which they are received, when jobs are received simultaneously. In other words, you can give jobs received via the LocalTalk interface priority over jobs received via the parallel and serial interfaces.

Menu	Administration/Communications/LocalTalk/Def Job Prio
Choices	001-100 (highest-lowest priority)
Default	001 (highest priority)

Storage Options

Hard disks provide true virtual memory as well as storage for character bitmaps, downloaded outline fonts, and other files.

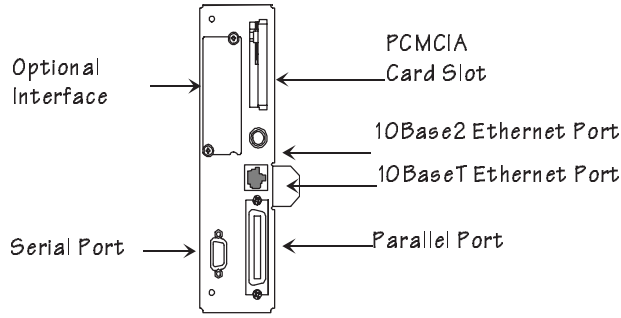
IDE-SCSI Board

An optional internal IDE-SCSI (Interface-Integrated Drive Electronics-Small Computer System) board supports an internal IDE hard disk and up to three external SCSI hard disks.

» **Note:** *Ensure that your QMS 1060E Printer System is installed, configured, and tested for proper operation before you attempt to install the internal IDE hard disk on the IDE-SCSI board.*

The printer can only accommodate one IDE-SCSI board that is installed in the optional I/O opening on the back of the printer. This opening is to the left of the interface ports and it is covered with a rectangular metal plate

If you already harve an IDE-SCSI board installed, you must remove it before you can install an internal IDE hard disk. (See the following "Installing an IDE-SCSI Board" procedure, it will refer you to the appropriate section of this chapter for detailed instructions.)



IDE-SCSI Board Assembly Kit

The IDE-SCSI board assembly kit includes the following:

- IDE-SCSI board
- Plastic ribbon connector cables

Installing an IDE-SCSI Board

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

Caution*: It's very important to protect the printer controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

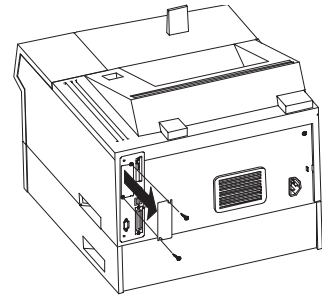
If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Redischarge your body each time after walking around and before touching the printer controller board again*

» **Note:** *You need a Phillips screwdriver for this procedure..*

1 **Turn off the printer, and then disconnect the power cord and all interface cables (parallel, serial, and Ethernet) from the printer.**

2 **Remove the two screws from one of the the optional I/O interface plates on the back of the printer.**

You can use either of the optional interface ports.



» **Note:** *Save the two screws. (You'll use them when you install the board.) You can either save or discard the plate.*

3 **Access the printer controller board.**

Use the instructions in the "Removing the Controller Board" section of this chapter.

4 **If you are installing an internal hard disk at this time, use the instructions in the , "Installing an Internal IDE Hard Disk" section, later in this chapter, and then return to step 5.**

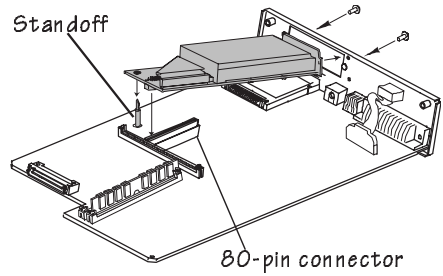
If you already have an internal IDE hard disk installed and you want to remove it, follow the directions in the "Removing an Internal IDE Hard Disk" section, later in this chapter.

5 Attach the IDE-SCSI board.

a Position the board so the port slides into the optional I/O opening you just created in step 2 above.

b Snap the board onto the 80-pin connector on the controller board.

c Press down on the board gently until it is secured by the 80-pin connector and by the plastic standoff post.



6 Secure the IDE-SCSI board to the rear interface panel with the two screws you removed earlier.

7 Replace the controller board.

Use the instructions in the “Reinstalling the Controller Board” section, earlier in this chapter.

8 If necessary, connect the external SCSI hard disk(s) to the new SCSI interface port on the interface panel.

An adapter cable may be necessary to connect the hard disk to the DB-25 connector on the board. Your QMS vendor should be able to provide you with this adapter cable.

“External SCSI Hard Disks,” later in this section, contains more information on external hard disks.

9 Reconnect all interface cables and the power cord, turn on any external hard disks, and then turn on the printer.

» **Note:** *For the printer to recognize external hard disks, each hard disk must be turned on before you turn on the printer. If the printer recognizes the disk(s)and the start-up page is enabled, check to ensure that* `DISK ONLINE` *prints on that page. If the start-up page is not enabled, print a status page and check to see if* `DISK ONLINE` *prints on that page. (See chapter 4, "Printer Configuration," of this manual, for information on how to print a status page.)*

If DISK ONLINE does not print, see chapter 6 of the Operation, the "External and Internal Disk Problems" section, for more information.

Properly installed disks will also appear in the "Options" section of the start-up page as `%%diskx%` *(where* `x` *is a 7 for an internal IDE hard disk and 0 - 6 for any external SCSI hard disks—this digit reflects the SCSI ID set on the back of the external SCSI drive).*

10 If this is a new hard disk, that isn't a Kanji hard disk, format it.

▲ ***Caution:*** *The only exception to formatting a new hard disk, is in the case of a Kanji hard disk that is pre-formatted with QMS Kanji fonts from the factory. DO NOT under any circumstances, reformat or initialize a Kanji hard disk. Reformatting this disk erases all data, fonts, and files.*

If it is reformatted or if data is modified such that it cannot be recognized by the printer, the Kanji hard disk must be returned to QMS for servicing. This is not covered by your warranty.

For details on how to format a hard disk, see the "Formatting a Disk" section, later in this chapter.

Removing an IDE-SCSI Board

Use the following procedure if you need to remove an already-installed IDE-SCSI board.

» **Note:** *You need a Phillips screwdriver for this procedure.:*

WARNING! *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

▲ **Caution:** *It's very important to protect the printer controller board from electrostatic damage while performing this task.*

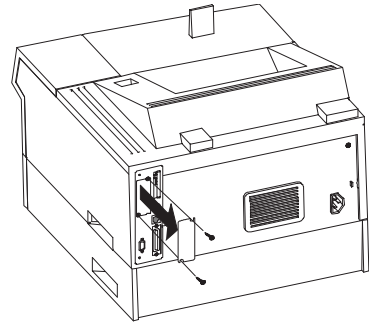
If an anti-static wrist strap is provided *in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but* ***turned off****). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.*

If you don't have an anti-static wrist strap*, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Also avoid walking around after grounding yourself.*

---

1 Turn off the printer, and then disconnect the power cord and all interface cables (parallel, serial, Ethernet, and SCSI) from the printer.

2 Remove the two screws from the optional I/O interface on the controller board.

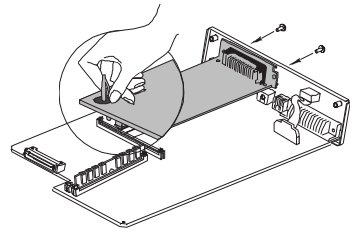


» **Note:** *Save these screws. (You'll use them when you reinstall the board.)*

3 Remove the controller board.

Use the instructions in the "Removing the Controller Board" section, earlier in this chapter.

4 Unlock the standoff by pressing in on its tip, using two fingers, until the board can easily be removed.



5 **Unsnap the board from the 80-pin connector on the controller board and pull it away from the I/O opening.**

6 **Slide the IDE-SCSI board out of the I/O opening.**

7 **If you have an IDE hard disk installed, you must remove it as shown in the "Removing an Internal IDE Hard Disk" section, later in this chapter.**

If you do not have an IDE hard disk installed, return to step 5 of the "Installing an IDE-SCSI Board" section, earlier in this chapter.

Internal IDE Hard Disk

IDE Hard Disk Assembly Kit

The IDE hard disk assembly kit includes the following:

- IDE hard disk
- 4 screws
- Plastic ribbon connector cables

Installing an Internal IDE Hard Disk

Only one internal IDE hard disk is supported. However, you can add up to three external SCSI hard disks to the printer.

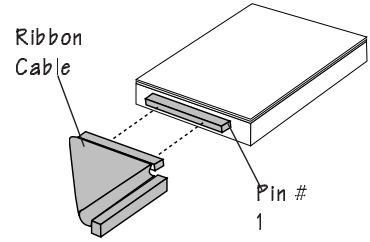
» **Note:** *Before installing an internal IDE hard disk, you must have an optional IDE-SCSI board.*

If you are installing this optional board for the first time, refer now to "Installing an IDE-SCSI Board," earlier in this section, for instructions. You will be referred to these instructions at the appropriate time.

If the board is already installed, you must remove it before you can install an internal hard disk. Refer to "Removing an IDE-SCSI Board," earlier in this chapter, for information on accessing the board.

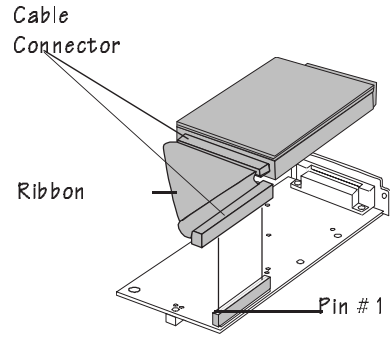
1 Connect one end of the plastic ribbon cable to the hard disk.

Align the colored stripe on the cable with pin 1 on the hard disk connector, and then slowly push the cable connector onto the hard disk connector.



2 Connect the other end of the cable to the IDE-SCSI board.

Align the colored stripe on the cable with pin 1 on the IDE-SCSI board connector, and then slowly push the cable connector onto the hard disk connector.



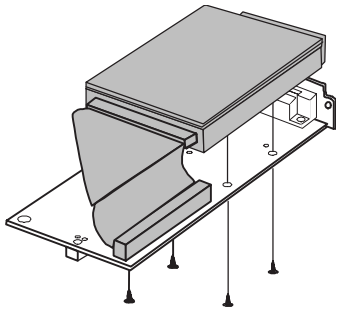
» **Note:** *Notice that the cable is folded so the blue stripe aligns easily with pin 1 on the connector. Pin 1 is also marked on the IDE-SCSI board.*

▲ **Caution***: Do not push or pull from the ribbon cable. Use the cable connector.*

3 Attach the hard disk to the IDE-SCSI board.

Align the hard disk with the 2.5" hard disk outline on the IDE-SCSI board. The screw holes in the bottom of the hard disk should match up with the holes in the board.

Fasten the hard disk to the board with the four screws provided in the kit



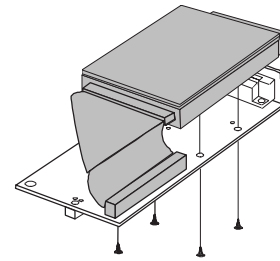
4 Return to step 5 of the “Installing an IDE-SCSI Board,” procedure, earlier in this chapter.

Removing an Internal IDE Hard Disk

» **Note:** *You need a Phillips screwdriver for this procedure.*

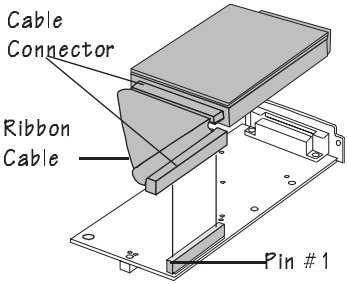
1 Remove the four screws that fasten the hard disk to the IDE-SCSI board.

» **Note:** *Save the four screws. You will use them if you install another internal IDE hard disk.*

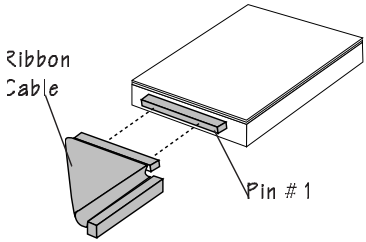


2 Remove one end of the connector cable from the IDE-SCSI board and the other end of the cable from the hard disk connector.

▲ **Caution:** *Do not push or pull from the ribbon cable, use the cable connector.*



IDE-SCSI Board Connector



IDE Hard Disk Connector

3 If you are installing another hard disk, go to the "Installing an Internal IDE Hard Disk" procedure, earlier in this chapter.

If you are not installing another hard disk, return to step 5 of the "Installing an IDE-SCSI Board" procedure, earlier in this chapter.

External SCSI Hard Disks

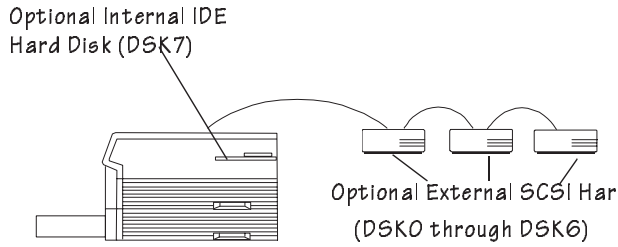
For information on installing your external hard disk, see the documentation that comes with your hard disk.

Hard disk specifications are included in Q-FAX document 6502, "QMS-tested SIMMs and Hard Disks." See appendix A, "QMS Customer Support," of this manual for information on accessing Q-FAX documents.

Identifying Hard Disks

The hard disks are identified by their device numbers. If an optional internal hard disk is attached it has a device number of DSK7. If optional external hard disks are attached to the printer, their device numbers can range from DSK0 to DSK6. Device numbers of external disks can be set on the back of the hard disk by the installer.

» **Note:** *If the internal hard disk is removed or an external hard disk is not turned on, the printer does not reset non-volatile RAM to the factory defaults.*



▲ **Caution***: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer (QMS 860, QMS 860 Plus, QMS-PS 1700, QMS 1725, QMS 1725 SLS, QMS-PS 2000, QMS 2025, QMS-PS 3200, QMS 3225, QMS 3825, QMS 4525, QMS ColorScript 210/230, QMS Laser 1000, or QMS magicolor Laser Printer), this QMS 1060E Print System software release will automatically reorganize the files on the hard disk when the printer is turned back on again. (The printer release number is listed on both the start-up and the status page.) Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is re-attached to an earlier QMS Crown printer again.*

This reorganization process takes time. If, when you first turn the printer on after attaching a previously used hard disk, it does not come on line immediately, be patient. Interrupting the reorganization process could cause all files on the hard disk to be lost.

Turning on an External Hard Disk

For the printer to recognize one or more external hard disks, each hard disk must be turned on before you turn on the printer. If the printer recognizes the disk(s)and the start-up page is enabled, check to ensure that `DISK ONLINE` prints on that page. If the start-up page is not enabled, print a status page and check to see if `DISK ONLINE` prints on that page. (See chapter 4, “Printer Configuration,” of this manual, for information on how to print a status page.)

If `DISK ONLINE` does not print, see the *Operation* guide, chapter 6, the “External and Internal Disk Problems” section, for more information.

Properly installed disks will also appear in the “Options” section, of the start-up page (if it’s enabled) and on the status page as `%%disk`*x*`%` (where *x* is a 7 for an internal IDE hard disk and 0 - 6 for any external SCSI hard disks, depending on the SCSI ID set on the back of the hard disk.

Configuring Hard Disks

To configure the hard disk(s) you may need to either Enable Disk Swap or increase the Disk Cache size, dependent on your printer’s memory. (See the following section that applies to your printer memory.

After the Administration/Memory/Enable Disk Swap or Administration/Memory/Disk Cache menu settings are reconfigured and the printer is restarted, you need to print a status page to check that the Disk Cache size is increased. (Notice that `VM remaining` memory is also increased.)

Standard Memory

If your printer has only the standard memory, then you need to enable disk swapping. See chapter 4, Enable Disk Swap,” for information on how to enable this option through the Administration/Memory/Enable Disk Swap menu

DISK ONLINE prints on the status page if the printer recognizes the disk(s). (See chapter 4, “Printer Configuration,” for information on how to print a status page.)

Additional Memory

If your printer has additional memory, then you only need to increase the Disk Cache size to 256 KB. See chapter 4, “Disk Cache,” for more information on increasing the disk cache client’s size.

Using the Disk Operations Menu

The Administration/Disk Operations menu contains all of the options you need to format a hard disk, as well as to install optional fonts and emulations on and remove them from a hard disk.

» **Note:** *The install, remove, and format disk operations do not include support for a Font Folio disk. You must download the fonts to your hard disk from host applications.*

Error Messages

The following two messages may appear while you are using the Disk Operations menu.

Message	Meaning	Action
FORMAT FAILED	The hard disk cannot be used.	Press the Menu key to remove the message, and contact your QMS vendor.
WRITE ERROR	The hard disk encountered a write error, or there is no room for the data on the hard disk or in RAM.	Press the Menu key to remove the message, and restart the operation from the beginning.

Formatting a Hard Disk

You have two ways of formatting a hard disk:

- PS Executive Series Utilities
- Printer configuration menu

Using PS Executive Series Utilities

The PS Executive Series Utilities offer formatting options for both Macintosh and PC setups. See the on-line documentation for details on formatting disks.

Using the Printer Configuration Menu

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk,# is the hard disk number, and CAR0 refers to the font card number).

» **Note:** *You may need to press the Next key one or more times to advance through the list of selections or options.*

Press this key ...	to ...	and the message window reads ...
Select	Access the Disk Operations/Format Disk menu	FORMAT DISK
Select	Access the Format Disk/Dsk#: menu.	DSK#:
Next or Previous	Advance through the list of attached disks.	DSK#:
Select	Select the disk and display a format confirmation message.	ARE YOU SURE?
Select	Begin the formatting process. While the system reboots, the hard disk is being formatted.	FORMATTING...
	Notify you when the formatting process is complete. The printer then powers up, and a start-up page prints (if enabled).	FORMAT COMPLETE

Installing an Optional Font

Optional fonts can be installed in two ways:

- You may use optional fonts by inserting the font card in the card slot on the back right-hand side of the printer below the optional interface ports. However, when you remove the font card from the card slot, you can no longer use those fonts. This procedure is covered in the “Using Font and Security Cards” section, found earlier in this chapter.
- You can copy the contents of a font card to an external hard disk if one is available. The procedure that follows describes how to install the font card on your hard disk. Once the fonts are stored on disk, they can be downloaded to the printer's memory when needed for printing.

▲ ***Caution:*** *If you install a font card on a hard disk, any optional previously downloaded fonts of the same emulation type are overwritten, and those fonts must be downloaded again before they can be accessed. For example, optional PostScript fonts on the hard disk are overwritten by PostScript fonts on an optional PostScript font card.*

» **Note:** *Before downloading any fonts, ensure that the printer has enough memory to download the fonts. See chapter 6, the “Problems Downloading Fonts ” section, in the Operation guide, for information on increasing printer memory when downloading fonts.*

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window ((DSK refers to the hard disk, # is the hard disk number, and CAR0 refers to the font card number).

» **Note:** *You may need to press the Next key one or more times to advance through the list of selections or options.*

After the option is installed, remove the card from the slot and place the printer back on line.

Press this key ...	to ...	and the message window reads ...
Select	Access the Disk Operations/Install Option menu	INSTALL OPTION
Select	Access the Install Option.	DSK#:
Next or Previous	Advance through the list of attached disks.	DSK#:
Select	Access the disk where option is being installed.	INSTALL SOURCE
	After a 3 second delay display the card address from which the font or emulation is being installed.	CAR0:
Select	Prompt you to insert the font card in the card slot on the rear of the printer to the right of the optional interface ports.	INSERT MEDIA
	Read data from the card and instal the appropriate files on the hard disk. This usually takes several minutes.	READING DATA...
	Acknowledge completion of the installation process.	INSTALL COMPLETE
Menu	Exit from the Install Option menu. and returns to the Disk Operation menus.	DISK OPERATIONS

Removing an Optional Font

Use the Disk Operations/Remove Option to remove optional fonts from your hard disk. You need the original font card containing the files. The Remove Option compares the contents of the card against the contents of the hard disk and then deletes the matching files from the hard disk.

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk, # is the hard disk number, and CAR0 refers to the font card number).

Press this key ...	to ...	and the message window reads ...
Select	Access the Disk Operations/Remove Option menu	REMOVE OPTION
Select	Access the Remove Option.	DSK#:
Next or Previous	Advance through the list of attached disks.	DSK#:
Select	Access the disk from which information is being removed.	REMOVE SOURCE
	After a 3 second delay display the card address from which the font is being removed.	CAR0:
Select	Prompt you to insert the font in the card slot on the rear of the printer to the right of the optional interface ports.	INSERT MEDIA
	Read data from the card and remove the appropriate files from the hard disk. This usually takes several minutes.	READING DATA...
	Acknowledge completion of the removal process.	REMOVE COMPLETE
Menu	Exit from the Remove Option menu and returns to the Disk Operation menu.	DISK OPERATIONS

❖

A

QMS Customer Support

In This Chapter . . .

- Sources of customer support
- QMS world-wide offices

Sources of Support

Several sources of help and information are available, depending on the type of help you need:

Your QMS Vendor

Your local vendor (the one from whom you bought the printer) may be best equipped to help you. Your vendor has specially trained service technicians available to answer questions, and the equipment to analyze your printer problems.

Your Application Vendor

Often, “printing” problems have more to do with the application being used than with the printer. In this case, the application manufacturer is the best source of help.

Q-FAX

Q-FAX, a QMS information retrieval service, provides application notes, technical support notes on common printing problems, and information about printer specifications, options, accessories, consumables, and prices.

In the United States and Canada, call (800) 633-7213 to reach Q-FAX. In all other countries, call (334) 633-3850. Have your fax number handy when you call (or place the call from your fax machine's handset).

You can choose to have either a directory (a list of currently available documents on a particular topic) or a specific document sent to you. The first time you call, request the directory (press 2 on your phone or fax keypad when prompted). Then call back to request specific documents. You can order up to three documents per call.

The QMS Corporate Bulletin Board System

The QMS Corporate Bulletin Board System (BBS) contains technical support notes, application notes, drivers, patches, and utilities, and you may leave technical questions not requiring an immediate response on electronic mail for the Sysop (System Operator).

The bulletin board [(334) 633-3632] operates at 1200, 2400, 9600, and 14400 baud, 8 data bits, no parity, 1 stop bit, with XMODEM, YMODEM, and ZMODEM capabilities. Contact the QMS Customer Response Center for more information about the bulletin board.

CompuServe

Through CompuServe, you ask general (non-technical) questions, share information with other users, and access printing information and programs. When you use CompuServe type `go qmsprint↵` to go directly to the forum where QMS is located.

The QMS library section contains application notes, printer drivers, utilities, technical information, and announcement files.

Internet

The QMS server provides access to technical reports, new product announcements, a trade show schedule, and other general information about QMS.

You can access the QMS server via any one of the many web viewers available to Internet users. If you don't have access to a web viewer, we recommend the NCSA Mosaic web viewer (Mosaic is at ftp.ncsa.uiuc.edu). The QMS home page is at http://www.qms.com/. The QMS ftp resource is ftp.qms.com.

QMS Customer Response Center (CRC)

The QMS Customer Response Center is available from 7 a.m. to 6 p.m., Central Standard Time, at (334) 633-4500 (US). You can also fax questions to the CRC at (334) 633-3716 (US). Please indicate whether you would like a faxed or a phoned reply.

If you call for assistance, have the following information ready so our technicians can help you more quickly:

- Your phone number, fax number, and shipping address
- A description of the problem
- The printer model and serial number
- The type of host computer you are using
- The type and version of operating system you are using
- The interface you are using, and, if serial, the protocol
- The application and version you are using
- The emulation you are using
- Your printer firmware version (listed on the status and start-up pages)

QMS National Service

If you have a problem you cannot resolve, contact QMS National Service. You may need to contact QMS National Service for the following type of message (where # is the error number):

```
CALL FOR SERVICE ENGINE ERROR #
```

Phone Numbers

(800) 762-8894	Service information and maintenance pricing for QMS and other manufacturers printer's
(800) 858-1597	On-site service and depot repair information 7 a.m. to 7 p.m. Central Time
(334) 633-4300 **Extension 2530**	Spare parts ordering and information 8 a.m. to 5 p.m. Central Time

» **Note:** *The above numbers are valid in the United States. To contact QMS in other countries, see the "World-wide Offices" section later in this appendix.*

QMS World-wide Offices

United States/ Latin America	QMS, Inc. One Magnum Pass Mobile, AL 36618 (334) 633-4300 Product Information: (800) 523-2696 OEM Information: (800) 631-2692 Consumables: (800) 777-7782 Fax: (334) 633-4866 E-mail: info@qms.com Latin America Fax: (334) 639-3347
Asia-Pacific	QMS Asia-Pacific Melbourne 61 (3) 899 5777 Sydney 61 (2) 901 3235 Tokyo (81) (3) 3437 4030
Canada	QMS Canada, Inc. 9630 Rte. Trans-Canadienne Saint-Laurent, Québec H4S 1V9 Telephones: (514) 333-5940, (800) 361-3392 Fax: (514) 333-5949 National Service: (800) 268-4969 National Service Fax: (905) 673-7676 Offices in Ottawa, Québec City, Toronto, and Vancouver
Europe, Middle East, Africa	Düsseldorf (49) 211/596 1333 London (44) (1) 784 442255 Maarssen (31) 3465 51 333 Paris (33) (1) 4107 9393 Stockholm (46) (8) 725 5680

B

Technical Specifications

In This Chapter . . .

- Print engine specifications
- Physical characteristics
- Controller specifications
- Electrical and environmental requirements
- Print media specifications
- Cable pinouts
- Printer options and consumables
- Warranty considerations

Print Engine Specifications

Engine	Minolta SP-10X
Duty Cycle (Maximum)	10,000 pages per month
Type	Desktop, non-impact page printer
Print Method	Laser diode, fine micro-toning system
Print Speed	First print: up to 16 seconds per page (short edge first) Multiple print (short edge first): A4—8.2” x 11.7” (208 x 297 mm) 10.5 ppm Letter—8.5” x 11.0” (216 x 279 mm) 10.5 ppm Legal—8.5” x 14.0” (216 x356 mm) 8.6 ppm B5 ISO—6.93” x 9.85” (176 x 250 mm) 10.5 ppm Executive—7.25” x 10.5” (184 x 267) 10.5 ppm » **Note:** *First print is the elapsed time from when the Ready indicator shows and the printer has received a print request to when one sheet of paper is printed and delivered to the output tray. Multiple print is measured on and after the second page in continuous printing mode. Actual print speed depends on the host application.*
Resolution	300x300 dpi 600x600 dpi
Toner	HG (600 dpi) MINOLTA EP imaging cartridge; micro-fine black powder packed in a single-component, non-magnetic cartridge
Toner Cartridge Life	6,000 pages » **Note:** *Number of A4/letter size pages printed at 5% coverage in continuous print mode or 12 months after opening.*

Machine Life	300,000 prints or 5 years
Warm-Up Time	60 seconds or less under standard operating environment and rated voltage at 73.4° F (23° C)

Physical Characteristics

Dimensions	Standard configuration WxDxH 16.2" x 19.0" x 14.3" 411 mm x 482 mm x 363 mm The height increases by 4.0"/101.6 mm with the optional feeder.
Weight	Standard unit—37.5 lbs (17 kg) without imaging cartridge The weight increases by 6.6 lbs (3.0 kg) with the optional feeder. The toner cartridge is approximately 2.3 lbs (1kg).

Controller Specifications

Emulations	PostScript—Level 1 compatibility mode and Level 2 HP PCL 5 (with HP-GL/2) HP-GL 7475A/7550A/7470A/ColorPro Lineprinter Support for downloadable optional emulations
Fonts	39 resident PostScript fonts that can be scaled from 4 points upward and rotated to any angle in 1° increments; all typefaces have multilingual character sets 7 resident bitmap HP PCL fonts in 25 symbol sets (automatically rotated in portrait, landscape, reverse portrait, and reverse landscape orientation) 13 resident scalable HP PCL fonts in 40 symbol sets that can be scaled from .25 points upwards to 999.75 points 40 resident HP-GL symbol sets Support for Type 1 and Type 3 host-resident downloadable PostScript fonts. Support for Type 1 printer-card-resident PostScript fonts Support for Type 42 (PostScript format) host-resident downloadable TrueType fonts Support for 37 HP PCL fonts Support for Kanji hard disk
Interfaces	Ethernet, Centronics and IEEE 1284 parallel, and serial interfaces Support for one optional interface (Ethernet, Token-Ring, LocalTalk, or hard disk—internal IDE and/or SCSI with up to 3 external hard disks)
Memory	8 MB RAM standard, upgradable to 64 MB; 4 MB Flash ROM; 2 MB Font Mask ROM, and optionally Font SIMM for up to 16 MB
Type	IDT 3081E RISC microprocessor operating at 33 MHz

Electrical Requirements

Frequency	50/60 Hz (± 3 Hz)
Power Requirements	120V 50/60 Hz (about 110-130 VAC) or 220/240V 50 Hz (about 200-260 VAC)
Power Consumption	120V (800 watts or less, 150w or less at standby with fuser on) 220 to 240V (800 to 900w, 150w or less at standby with fuser on)
Amperage	7.0 A or less (120 VAC) 4.0 A or less (220 to 240 VAC)

Environmental Requirements

Noise Level	Idle—maximum 35 dB (A) Printing—maximum 47 dB (A)
Ozone Density	The printer emits less than 0.1 parts per million (ppm) of ozone maximum with a 100% duty cycle for 8 hours of continuous operation
Relative Humidity	Printing: 15-85% RH (non-condensing) Storage (high): 85-95% RH (non-condensing) Storage (low): 10-35% RH (non condensing)
Temperature Range	Printing: 50-95° F (10-35° C) Storage (high): 95-104° F (35-40° C) Storage (low): -4-32° F (-20 to 0 ° C)
Atmospheric Pressure	61.3-101.3 kPa (400-760 mm Hg)

Print Media

Delivery	Print media is delivered face down as follows: about 250 sheets of 20 lb (75 g/m^2) paper about 100 transparency sheets about 120 label sheets about 50 envelopes
Input	One multipurpose tray (standard) One cassette feeder (standard) One additional cassette feeder (optional)
Feed	**Multipurpose tray** About 150 sheets of 20 lb (75 g/m^2) plain paper About 150 sheets of 20 lb (75 g/m^2) recycled paper About 50 sheets of transparencies About 50 sheets of labels About 10 envelopes About 50 sheets of letterhead About 50 sheets of thick paper **Paper cassette** About 500 sheets of 20 lb (75 g/m^2) plain paper About 500 sheets of 20 lb (75 g/m^2) recycled paper About 100 sheets of transparencies About 120 sheets of labels About 400 sheets of letterhead **Envelope Cassette** Supports envelopes in the following dimensions: Width: 3.6"-6.9" (92-176 mm) Length: 5.86"-9.84" (149-250mm) Capacity: about 50 envelopes
Loading	Automatic from multipurpose tray or paper cassette
Sizes	(See the “Print Media Sizes” table that follows this section)

Types	Plain paper Recycled paper Transparencies Envelopes Labels Letterhead/Bond Paper Thick Paper Cardstock » **Note:** *The printer does not support three-hole-punched paper.*
Selection	(See the "Print Media Selection" table that follows this section)
Weight	Paper (cassette): 16-24 lb (60-90 g/m^2) Paper (multipurpose tray): 16-24 lb (60-90 g/m^2) Transparencies (multipurpose tray): 16-34 lb (60-128 g/m^2) Labels (multipurpose tray): 16-34 lb (60-128 g/m^2)

Print Media Sizes

Media	Media Size		Imageable Area		Feed Edge	*Input Source
	Inches	Millimeters	Inches	Millimeters		
A4	8.2x11.7	208x297	7.94x11.34	201.68x288.04	Short	M S O
B5 ISO	6.93x9.85	176x250	6.59x9.5	167.39x241.30	Short	M
Executive	7.25x10.5	184x267	6.94x10.17	176.28x258.32	Short	M
Legal	8.5x14.0	216x356	8.19x13.66	208.03x346.96	Short	M S O
Letter	8.5x11.0	216x279	8.16x10.69	207.26x271.53	Short	M S O
Com9	3.88x8.88	99x226	3.38x8.56	85.85x217.42	Short	M S O
Com10	4.13x9.50	105x241	3.81x9.19	96.77x233.43	Short	M S O
DL	4.33x8.67	110x220	3.17x7.50	80.52x190.50	Short	M S O
Monarch	3.88x7.50	99x191	2.69x6.32	68.33x160.53	Short	M S O

C5	6.38x9.01	162x229	5.19x7.82	131.83x198.63	Short	M S O
Envelope	3.6 to 6.65 5.86 to 9.43	91 to 169 x 149 to 240	2.4 to 5.7 4.66 to 8.64	60.96 to 144.78 118.36 to 219.46	Short	M S O
Postcard	4.13x5.83	105x149	3.83x5.50	97.28x139.70	Short	M
**Input Source Key: M = Multipurpose Tray; S = Standard Feeder; O = Optional Feeder*						

Print Media Selection

Paper Input	Plain Paper	Recycled Paper	Thick Paper	Ltr/Bond Paper	Transparency	Envelope	Label	Card Stock
1*	R	R	R	R	R	R	R	R
2*	R	R	N	R	R	N	R	N
3*	N	N	N	N	N	R	N	N

1* = Multipurpose Tray
2* = Paper Cassette
3* = Envelope Cassette
R = Recommended
N = Not Recommended or Guaranteed

Printer Options

Paper Handling

Paper Feeder	Optional cassette feeder that allows installation of dual paper cassettes.

Hard Disks

Internal IDE	Mounting space and connectors and support for one internal IDE hard disk.
External SCSI	Up to 3 external hard disks may be added.
Approved Vendors and Supported Sizes	Specifications are included in Q-FAX document 6502, “QMS-tested SIMMs and Hard Disks.” This document contains a description of each approved hard disk, its manufacturers and their part numbers, and the QMS products it’s used on. See appendix A, “QMS Customer Support,” of this manual to find out how to access Q-FAX documents.

SIMMs

Approved Vendors and Supported Sizes	Specifications are included in Q-FAX document 6502, “QMS-tested SIMMs and Hard Disks.” This document contains a description of each approved hard disk, its manufacturers and their part numbers, and the QMS products it’s used on. See appendix A, “QMS Customer Support,” of this manual to find out how to access Q-FAX documents.

Consumable Supplies

Cassettes	**Size**	**Capacity**
	A4	500 sheets
	Legal	500 sheets
	Letter	500 sheets
	Envelope	50 envelopes
Media —Sizes	See “Print Media Sizes,” earlier in this chapter.	
Media— Recommended Brands	**Paper**	**Plain**—Xerox 4024
		Laser—Hammermill Laser Print White
	Labels	Avery 5260/5160 (1" x $2\frac{5}{8}$ ")
		Avery 5261/5161 (1" x 4")
		Avery 5262/5162 ($1\frac{1}{2}$ " x 4")
		Avery 5163 (2" x 4")
		Avery 5164 ($3\frac{1}{3}$ "x 4”)
		Avery 5165 (uncut sheet)
	Transparencies	Canon brand type D 3-M type PP2500
Toner	HG (600 dpi) MINOLTA EP toner cartridge	

Cable Pinouts

Centronics/IEEE1284 Parallel

This table gives pinouts for the printer end of the Centronics/IEEE 1284 parallel cable used to connect your printer to a computer:

Signal Pin No.	Signal Description	Direction
1	Strobe-	In
2	Data 1	InOut
3	Data 2	InOut
4	Data 3	InOut
5	Data 4	InOut
6	Data 5	InOut
7	Data 6	InOut
8	Data 7	InOut
9	Data 8	InOut
10	Acnlg-	Out
11	Busy+	Out
12	Pe+	Out
13	Select	Out
14	Autofeed	In
15	Reserved	-
16	Ground	-
17	Ground	-
18	Vcc Test	-
19-30	Ground	-
31	Iprime	In
32	Fault-	Out
33	Reserved	-
34	Reserved	-
35	Reserved	-
36	Selectin	In

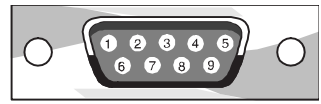
Notes to the Table

- **Direction** refers to the direction of signal flow as viewed from the printer.
- To prevent noise effectively, these cables should be shielded and connected to the chassis of the system unit and printer, respectively.
- All interface conditions are based on Transistor-Transistor Logic (TTL) level. Both the rise and fall times of each signal must be less than 0.2 microseconds.
- Data transfer must be carried out by recognizing the ACKNLG or BUSY signal.
- The cable must have an overall braided shield, Belden 8345 or equivalent.
- Connectors must have shielded housings. The overall shield must be bonded to the shielded housings at both ends of the cable.

Serial

This table gives the correct pinouts for the 9-pin male RS-232 serial interface:

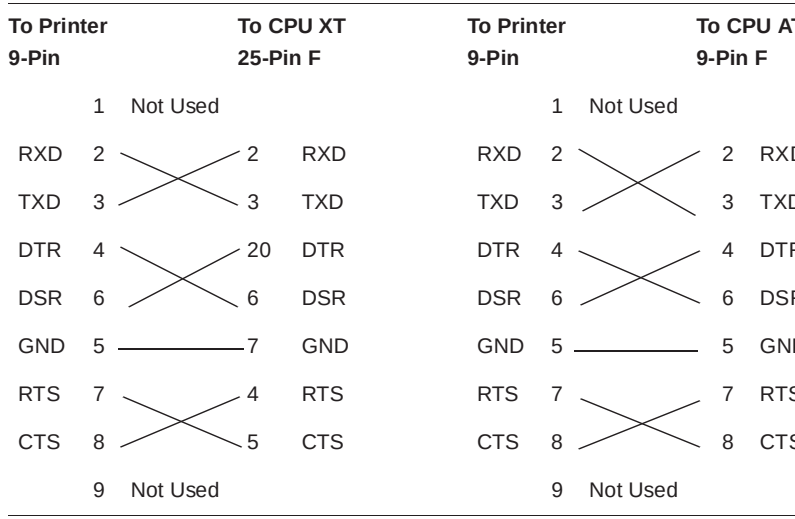
Pin	Name	*(Pinout view from interface)*
1	Not Used	
2	Receive Data (RXD)	
3	Transmit Data (TXD)	
4	Data Terminal Ready (DTR)	
5	Signal Ground (GND)	
6	Data Set Ready (DSR)	
7	Ready To Send (RTS)	
8	Clear To Send (CTS)	
9	Reserved	



IBM PC/XT, PC/AT, and Compatible Computers

The following diagrams show the serial **cable** pinouts for IBM PC/XT, PC/AT, and compatible computers.

» **Note:** *Not all serial cables are configured as shown and may require an additional null-modem adapter. Check with your cable vendor for compatibility.*

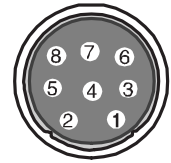


» **Note:** *To download printer system software via the serial port, your hardware must have RTS and CTS support. Make sure that pins 4 and 5 on the 25-pin serial cable and pins 7 and 8 on the 9-pin serial cable are criss-crossed as shown in this diagram.*

LocalTalk (Optional Interface)

These are the pinouts for the optional 8-pin LocalTalk interface:

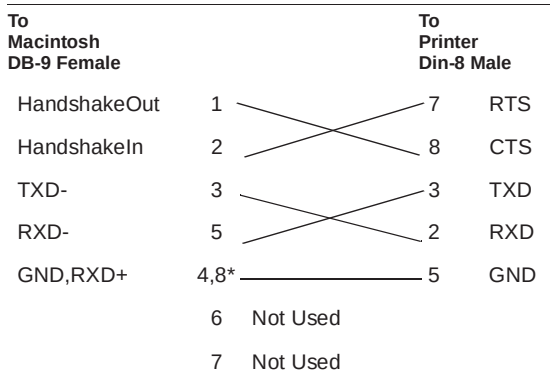
Pin	Name	*(Pinout view from interface)*
1,2,7	Reserved	
3	Transmit Data - (TXD)	
4	Signal Ground (GND)	
5	Receive Data - (RXD)	
6	Transmit Data + (TXD)	
8	Receive Data + (RXD)	



Macintosh to Serial

These are the pinouts for a cable connecting the Macintosh printer or modem port to the printer's serial port:

» **Note:** *To download printer system software from a Macintosh, you must have this type cable. Make sure pins 4 and 5 are criss-crossed as shown in this diagram.*



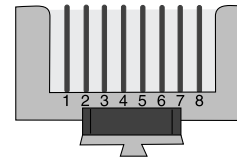
* Pins 4 and 8 must be connected together on the Din-8.

Ethernet

10BaseT

These are the pinouts for the 10BaseT Ethernet connector:

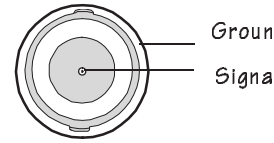
Pin	Name	*(View from the connector)*
1	Transmit Data +	
2	Transmit Data -	
3	Receive Data +	
4	No Contact	
5	No Contact	
6	Receive Data -	
7	No Contact	
8	No Contact	



10Base2 BNC

These are the pinouts for the 10Base2 BNC Ethernet connector:

Pin	Name	*(View from the front of the connector)*
1	Ground	
2	Signal	



Warranty Considerations

Various factors can affect a printer's warranty. Two important ones are consumables and electrostatic discharge. Read your printer warranty carefully, and then store it in a safe place.

Consumables and Your Warranty

The use of non-QMS consumables and/or accessories alone does not affect either your warranty or any maintenance contract you may have purchased. However, if QMS printer failure or damage is found to be directly attributable to the use of non-QMS consumables and/or accessories, QMS will not repair the printer free of charge. In this case, standard time and material charges will be applied to service your printer for that particular failure or damage. QMS recommends that you use only QMS consumables and accessories to support your printer. To order QMS consumables and accessories in the US, call (800) 777-7782. In all other countries, check appendix A, "QMS Customer Support," for the QMS office closest to you.

Electrostatic Discharge and Your Warranty

Electrostatic discharge can destroy circuit boards, such as a SIMM or your printer's controller board.

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground. The bare metal chassis of equipment, such as on the back of a computer, is suitable if it is plugged in but **turned off**. Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point because it must be unplugged before you perform these tasks.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. If you must walk around before completing your

task, discharge your body's static electric charge again before touching the printer controller board.

Handle circuit boards carefully by the edges. Incidental and consequential damages caused by not discharging electrostatic buildup can affect your printer warranty.

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C

Document Option Commands

In This Chapter . . .

- Supported Document Option Commands
- Updated Document Option Commands

Introduction

This appendix provides the following:

- A list of the supported Document Option Commands (DOC) for your QMS 1060E Print System.
- The most current information on PCL DOC commands.

Supported DOCs

This section contains the list of supported DOCs for the QMS 1060E Print System.

The commands are grouped by feature type. Each command is preceded by either a DOC statement (%%) or an IncludeFeature statement (%%IncludeFeature). See the *QMS Crown Document Option Commands* manual (available from your QMS vendor) for information on how to use each command.

Header/Trailer Page Commands

Print document creator	%%Creator:
Print creation date and time	%%CreationDate:
Print copyright statement	%%CopyRight:
Print current date	%%Date:
Print header page	%%IncludeFeature:header
Print document host	%%Host:
Print document owner	%%For:
Print document title	%%Title:
Print trailer page	%%IncludeFeature:trailer
Print routing information	%%Routing:
Print version and revision	%%Version:

HP-GL Emulation Commands

Expand plot	%%IncludeFeature:expand
Scale the image	%%IncludeFeature:scaling
Select enhanced resolution	%%IncludeFeature:enhanced
Select original paper size	%%IncludeFeature:size
Select pen width and color	%%IncludeFeature:pen
Select plotter	%%IncludeFeature:plotter
Shift the origin	%%IncludeFeature:origin
Reverse image	%%IncludeFeature:reverse

HP PCL 5 Emulation Commands

*Remove	%%IncludeFeature:remove
*Select font	%%IncludeFeature:font
*Select font index	%%IncludeFeature:fontid
*Disable scalable	%%IncludeFeature:scalablefonts
*Select symbol set	%%IncludeFeature:symbolset
*Set carriage return	%%IncludeFeature:criscrlf
*Set linefeed	%%IncludeFeature:lfiscrlf
*Set lines per inch	%%IncludeFeature:linesperpage
*Set lines per page	%%IncludeFeature:linesperpage
*Set point size	%%IncludeFeature:pointsize
*Remove resource	%%IncludeFeature:removeresource
*Install to disk	%%IncludeFeature:install
*Store fonts to disk	%%IncludeFeature:resource
Reset to PCL defaults	%%IncludeFeature:reset

» **Note:** **Indicates a DOC command about which details are provided in the following section, "Updated DOC Commands."*

Lineprinter Emulation Commands

Number lines	%%IncludeFeature:number
Select font	%%IncludeFeature:font
Set carriage return	%%IncludeFeature:criscrlf
Set formfeed	%%IncludeFeature:ffiscrff
Set point size	%%IncludeFeature:pointsize
Set linefeed	%%IncludeFeature:lfiscrlf
Set margins	%%IncludeFeature:lpmargins
Set lines per page	%%IncludeFeature:linesperpage
Set orientation	%%IncludeFeature:lporientation
Set tabs	%%IncludeFeature:tabs
Specify character map	%%IncludeFeature:map
Wrap lines	%%IncludeFeature:autowrap

PostScript Emulation Commands

Select PostScript level	%%IncludeFeature:languagelevel

Printer Commands

Collate print jobs	%%IncludeFeature:collate
End Comments	%%EndComments
Select emulation	%%IncludeFeature:emulation
Select paper	%%IncludeFeature:input
Select number of copies	%%IncludeFeature:numcopies
Select orientation	%%IncludeFeature:orientation
Select output bins	%%IncludeFeature:output
Set printer resolution	%%IncludeFeature:resolution
Support continuation lines	%%+

PCL 5 Emulation Terminology

This section provides detailed information on the terms and concepts used in the PCL 5 emulation. The understanding of these key terms and concepts is essential in order for you to benefit from the advantages provided by this emulation.

Resource

A resource is a location where downloaded objects such as fonts, macros, and patterns are stored. The printer has one default resource, and one additional resource for each attached disk. All downloaded objects are stored in file systems which reside on these resources. The RAM1: resource may be used as the default, but systems with at least one disk use the system disk instead. So, for any disk-equipped printer, all downloaded objects (except palettes which require special handling) are stored on disk. The default resource and one of the additional resources can reside on the same disk, but they will be located in different directories of that resource's file system. PCL resources on DSK6 are normally stored in the /bin/emulate/pcl/ fonts directory.

Object

The following are the three types of PCL downloaded objects:

Temporary

These objects reside on the current resource, and they are deleted for any of the following reasons:

- When the system is turned off (unless they are stored on disk). If a resource is stored on disk, it is preserved as permanent when the system is restarted.
- When they are explicitly deleted either at the beginning or end of a job (unless the Administration/Emulations/PCL5/Retain Temporary menu option is set to On or On Compatibility).
- When they are implicitly deleted

—With the <ESC>E command to reset the system.

—With the Printer Job Language command (<ESC>12345X) to reset the system.

—With a QMS End-of-Job command (**%%EndofDocument**). (See chapter 5, the “End Job Mode” ”section, in the Reference guide for more details on this command.

—The Administration/Emulations/PCL5/Retain Temporary menu option allows you to save objects across job boundaries.

Permanent

These objects reside on the current resource, and are deleted if they are in RAM when the power is turned off or via an explicit delete.

» **Note:** *The Printer Reset command (<ESC>E) and the Printer Job Language command (<ESC>%-12345X) don’t delete permanent objects.*

External

These objects reside on the additional resources.

Object

All objects are temporary when first created. They can be made permanent objects through PCL commands. Both temporary or permanent objects can become external objects when the current resource is changed (for temporary objects the Administration/Emulations/PCL5/Retain Temporary menu must be set to On, True, or On Compatibility). External objects become permanent when the resource on which they reside becomes the current resource.

User-downloaded PCL objects (with the exception of palettes) are identified by an ID when they are downloaded. The ID is usually set by the file performing the download. If not, the system will provide a default value (normally 0, but this can be set using the **%%Include-Feature:install** DOC). If two objects of the same type are provided with the same ID, the last one received replaces the former.

» **Note:** *From this point on downloaded objects are accessible by their IDs.*

Fonts

Fonts are a unique set of objects that have an ID and attributes (symbol set, spacing, pitch, height, style, weight, and typeface number). You access a font by specifying a desired set of attributes. The system selects the font that most closely matches these attributes from the available set of fonts.

There are two types of fonts: bound and unbound. A bound font supports a single symbol set. An unbound font supports multiple, but not all, symbol sets. With unbound fonts, the symbol sets are organized into two groups: normal and Dingbats. All downloaded fonts are bound, and all resident fonts (except Zapf-Dingbats which supports the Dingbats symbol set) support the group of normal symbol sets.

In the PCL 5 emulation, only fonts located on the current resource may be accessed by a PCL font ID using the normal <ESC>(#X command. All other fonts (resident, cartridge, or other), including those stored on the additional resources can be accessed only by attributes.

Also, **only objects stored on the current resource may be deleted directly by PCL**. Thus, unless explicitly removed, **external fonts are always available to all PCL jobs**.

Font Index Numbers

In addition to its ID, a downloaded font also has a unique index number which is automatically assigned by the printer when the font is downloaded. This index number may change if new resources are added, but in practice it usually remains fixed. All currently available PCL fonts (resident, cartridge, temporary, permanent, and external) are listed with their font index numbers on the advanced status page.

The font index number option on the Administration/Emulations/PCL5/Default font menu defines the *default* PCL font for a job (If Select by Index is specified as the default PCL font).

» **Note:** *This is true for fonts on any resource.*

Do not confuse the font index number with the PCL font ID, a mechanism used to identify downloaded fonts in the PCL language using the <ESC>(#X command. There is no way to specify fonts by their font index numbers from within the PCL language. Only the default PCL font is affected.

Updated PCL 5 DOCs

This section provides the most current information on PCL 4 and PCL 5 DOC commands.

Disable Scalable Fonts Command

Syntax	**%%IncludeFeature:scalablefonts(*value*)**	
Purpose	Enables/disables PCL 5 scalable fonts	
Variable	***value***	
	Purpose	Specifies whether to disable scalable fonts.
	Range	0—Enables scalable fonts 1—Disables scalable fonts
	Default	0
Notes	Disable scalable fonts to ■ Print PCL 4 documents which inadvertently select PCL 5 scalable fonts. ■ More closely emulate the PCL 4 font environment.	

Install Object Command

Syntax	**%%IncludeFeature:install(*resource id object id*)**	
Purpose	Establishes the current resource and the default object ID value for the current job to which it is attached. If it is attached to a job that downloads a font without setting the current object ID using the PCL escape sequence <ESC>(#X, it has the appearance of "storing" the font on disk.	
Variables	***resource id***	
	Purpose	Identifies one of the possible locations for downloaded objects
	Range	0 to 6
	Default	Internal system disk
	Format	Integer
	Notes	If no **%%IncludeFeature:install** DOC command is sent, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the system disk.
	object id	
	Purpose	Assigns an ID to an object, such as a font, macro, or pattern
	Range	0-32767
	Default	0
	Format	Integer

	Notes	The object ID can be used instead of the usual PCL command to assign an ID. This ID is overwritten by any ID assigned from the PCL print job, if present. If neither a DOC command nor the PCL print job specify an ID, the default ID of 0 is used. Identifiers must be unique. If the ID matches an ID for an existing object, that object is deleted and replaced by the new object. If a **%%IncludeFeature:remove** command precedes a **%%IncludeFeature:install** command, the install command is ignored (these two commands are mutually exclusive).
Notes	All downloaded objects are by default temporary and will be deleted at the end of a job unless Administration/ Emulations/PCL5/Retain Temporary is set to On or On Compatibility. If the file the %%IncludeFeature:install command is attached to does not make its downloaded fonts permanent or Administration/Emulations/PCL5/ Retain Temporary is not set, then those objects are removed from the disk when the job completes. A downloaded font can be accessed only by its ID if the font is stored on the current resource. Regardless of its resource, a font can be selected by its attributes. Example A below shows a pair of jobs that will not produce the desired results (subjob 2 has only the appearance of storing the font on disk). By contrast, examples B and C show a pair of jobs that will produce the desired results.	
Examples	**Example A—Job 1**	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F

Example A—Job 2	<ESC>(20X*this text is NOT in the downloaded font...*
Example B—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<download font header>><ESC>*c33E <ESC>(s#W<<char 33 data>><ESC>*c34E <ESC>(s#W<<char 34 data>>.. <ESC>*c5F
Example B—Job 2	<ESC>(8U<ESC>(s1p12v0s0b4153*This text will be in the downloaded font,* if it supports the ROMAN-8 symbol set, is proportionally spaced, 12 points in height (or scalable), upright, medium weight, and has type # 4153.
Example C—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F
Example C—Job 2	%! %%IncludeFeature:emulation(pcl5) install(6) %%EndComments <ESC>(20Xthis text is also in the downloaded font...

Remove Object Command

Syntax	**%%IncludeFeature:remove(*resource id object id object type*)**	
Purpose	Removes an external object from the printer system.	
Variables	***resource id***	
	Purpose	Indicates the resource from which the object is to be removed.
	Range	0 to 6
	Default	n/a
	Format	Integer
	Note	This ID must be specified. It indicates the resource from which the desired object is to be removed. There is no way to specify “all resources”. If an install command precedes the remove command, the remove command is ignored (these commands are mutually exclusive). If the disk does not exist, PCL issues the `NO SPACE FOR FONT, MACRO, OR PATTERN` error message.
	object id	
	Purpose	Specifies the ID of the object that is to be removed from the printer system.
	Range	*, -1 to 32767
	Default	-1 (wildcard)
	Format	Integer
	Notes	If the ***object id*** is not specified, or if it is specified as * or -1, all objects on the specified resource are removed.
	object type	
	Purpose	Specifies the kind of objects that are to be deleted from the specified printer system.
	Range	*, font, macro, pattern, or other object type
	Default	n/a

	Format	Character
	Notes	If ***object type*** is * or is not specified, then all objects on the specified resource with the specified object id are removed.
Notes:	Unlike the **%%IncludeFeature:install** command, the **%%IncludeFeature:remove** command does not set any defaults, and it is not directly related to the job to which it is attached. This command allows you to remove external objects from the system without having to generate a job containing both the DOC command to set the appropriate current resource and the PCL code to delete the desired object. If this command is specified more than once, the last command received is the one that will be executed. In the following example, the **remove(6 5 font)** command is executed, and the **remove(6 1 macro)** command is ignored: **%%IncludeFeature:remove(6 1 macro) remove(6 5 font)**	

Remove Resource Command

Syntax	**%%IncludeFeature:removeresource(*resource id object id*)**	
Purpose	Identifies an external object that is to be removed from the printer system.	
Notes	This is an obsolete DOC command that is identical to the remove command, except that it does not allow specification of an object type. The DOC string "**removeresource(aaa bbb)**" is equivalent to "**remove(aaa bbb ***)".	
Variables	***resource id***	
	Purpose	Indicates the resource from which the object is to be removed.
	Range	0-6

Default	n/a
Format	Integer
Notes	This ID must be specified. It indicates the resource from which the desired object is to be removed. There is no way to specify "all resources." If a **%%IncludeFeature:install** command precedes the **%%IncludeFeature:remove** command, the remove command is ignored (these commands are mutually exclusive). If the disk does not exist, PCL issues the `NO SPACE FOR FONT, MACRO, OR PATTERN` error message.
object id	
Purpose	Specifies the ID of the object that is to be removed from the printer system.
Range	*, -1 to 32767
Default	-1 (wildcard)
Format	Integer
Notes	If the object id is not specified, or it is specified as * or -1, all objects on the specified resource with the specified object type are removed.

Resource Command

Syntax	**%%IncludeFeature:resource*(resource id object code)***
Purpose	Establishes the current resource and the default object code value for the current job to which it is attached.

Notes	This command is identical to the **%%IncludeFeature:install** DOC command. It is included for backward compatibility. All downloaded objects are by default temporary, and will be deleted at the end of a job unless Administration/ Emulations/PCL5/Retain Temporary is set to On, True, Or On Compatibility. If the file that the %%IncludeFeature: resource command is attached to does not make the downloaded font permanent and Administration/ Emulations/PCL5/Retain Temporary is not set, then those objects are removed from the disk when the job completes. A downloaded font can only be accessed by its ID if the font is stored in the current resource. Regardless of its resource, a font can be selected by its attributes.	
Variables	***resource id***	
	Purpose	Identifies one of the possible locations for downloaded objects.
	Range	0-6
	Default	Internal system disk (usually DSK6:/BIN/EMULATE/PCL/FONTS
	Format	Integer
	Notes	If no resource item is provided, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the system disk.
	object code	
	Purpose	Assigns a code to an object such as a font, macro, or pattern.
	Range	0-32767
	Range	0
	Format	Integer

Select Font Command

Syntax	**%%IncludeFeature:font (*font name*)**		
Purpose	Specifies the default font to use.		
Notes	Fonts are identified by the names shown above. Only the resident fonts may be selected (the available set varies from printer to printer). An asterisk "*" in the name indicates that a font is scalable, and that a point size is to be applied. The value selectbyid indicates that the default font ID or unique font index will be used for default font selection. Selecting a bound, bitmap font overrides the default settings for symbol set and point size. An unbound font uses the specified default symbol set if possible, while a scalable font uses the default font size.		
Variable	***font name***		
	Purpose	Specifies the default font name.	
	Range	courier12 courier12bold courier12italic courier10 courier10bold courier10italic lineprinter times* times*italic times*bold	times*blditalic univ* univ*italic univ*bold univ*blditalic univcond* univcond*italic univcond*bold univcond*blditlc selectbyindex
	Default	Depends on printer configuration	
	Format	Character	

Select Font Index Command

Syntax	**%%IncludeFeature:fontid *(index #)***
Purpose	Specifies the default font index number.

Notes	This index is used when the Default Font selected is selectbyid. This allows for selection of fonts only on the current resource. Selection of default font by index overrides the symbol set value. The symbol set is overridden if a bound font is selected as the default or if an unbound font is selected that does not support the default symbol set. If a font with the specified index exists, it is selected as the Default Font. If the specified value does not exist, courier 12 point is substituted.	
Variable	***index #***	
	Purpose	Specifies the index number of the default font.
	Range	0 to 32767
	Default	Selectbyid-dependent
	Format	Integer

Select Symbol Set Command

Syntax	**%%IncludeFeature:symbolset *(name)***
Purpose	Specifies the default symbol set for the emulation.
Notes	This command specifies the default symbol set. Not all symbol sets are available with certain resident fonts. In particular, the Desktop, PS Math, Math 8, Microsoft Pub, Pi Font, PS Text, Ventura Intl, Ventura Math, Ventura US, and Windows symbol sets cannot be used with the resident bitmap fonts: courier10, courier10bold, courier10italic, courier12, courier12bold, courier12italic, and lineprinter. The five dingbat symbol sets (PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, and Zapf-Dingbats300) can be used with all fonts. If a mismatch between symbol set and font occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed by QMS, this matches the Times* font, but other user installed fonts could change this result.

Variable	**name**	
	Purpose	Specifies the symbol set name.
	Range	roman-8 iso-60 pc-850 iso-61 pc8-us iso-69 pc8-dn iso-84 ecma-94 iso-85 legal desktop hpgerman ps-math hpspanish math8 iso-2 microsoft-pub iso-4 pi-font iso-6 ps-text iso-10 ventura-intl iso-11 ventura-math iso-14 ventura-us iso-15 windows iso-16 ps-zapf-dingbats iso-17 ventura-dingbats iso-21 zapf-dingbats100 iso-25 zapf-dingbats200 iso-57 zapf-dingbats300
	Default	n/a
	Format	Character

Set Carriage Return (Line Termination)

Syntax	**%%IncludeFeature:criscrlf*(value)***	
Purpose	Controls the default line termination mode (the ***<ESC>&k#G*** command). Specifies the line termination treatment of a carriage return.	
Variable	***value***	
	Purpose	Specifies whether a carriage return is treated simply as a carriage return, or as a carriage return-line feed combination.

Range	Off/false—Treat line feed as a line feed. On/true—Treat line feed as a carriage return-line feed combination.
Default	Printer configuration dependent
Format	Boolean
Notes	The result of various settings for these parameters is shown in table below, in terms of the equivalent code passed to the PCL line termination command (*<ESC>&k#G*). The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to off, and Macintosh listings usually require the third setting (lfiscrlf off, criscrlf on). The following table shows the criscrlf/lfiscrlf commands and the corresponding PCL Line Termination command parameters.

LFISCRLF	CRISCRLF	PCL Code	Comments
Off	Off	0	CR→CR,LF→LF,FF→FF
On	Off	2	CR→CR,LF→CR-LF,FF→CR-FF
Off	On	1	CR→CR-LF,LF→LF,FF→FF
On	On	3	CR→CR-LF,LF→CR-LF,FF→CR-FF

Set Linefeed (Line Termination)

Syntax	**%%IncludeFeature:lfiscrlf *(value)***
Purpose	Controls the default line termination mode (the ***<ESC>&k#G*** command); specifies the line termination treatment of a linefeed.
Variable	***value***

Purpose	Specifies whether a linefeed is treated simply as a linefeed or as a carriage return-linefeed combination
Range	Off/false—Treats linefeed as a linefeed. On/true—Treats linefeed as carriage return-linefeed combination

Default	Printer configuration dependent
Format	boolean
Notes	The result of various settings for these parameters is shown in the table included in the Set Carriage Return (Line Termination) discussion, in terms of the equivalent code passed to the PCL line termination command. The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to Off, and Macintosh listings usually require the third setting (lfiscrlf Off, criscrlf On). » **Note:** *The FF becomes a CR-FF when the LF is a CR-LF.*

Set Lines Per Inch Command

Syntax	**%%IncludeFeature:linesperinch** ***(#)***	
Purpose	Sets the default PCL line spacing.	
Notes	Both the **%%IncludeFeature:linesperinch** and **%%IncludeFeature:linesperpage** DOC commands affect PCL's default VMI (vertical motion index). In the event that both are specified, the linesperpage DOC command is ignored.	
Variable	#	
	Purpose	Specifies the default number of lines per inch.
	Range	1-48
	Default	6
	Format	Real

Set Lines Per Page Command

Syntax	**%%IncludeFeature:linesperpage *(#)***	
Purpose	Sets the default PCL line spacing.	
Notes	Both the **%%IncludeFeature:linesperinch** and **%%IncludeFeature:linesperpage** DOC commands affect PCL's default VMI (vertical motion index). In the event that both are specified, the linesperpage DOC command is ignored.	
Variable	#	
	Purpose	Specifies the number of lines on the default page at the default orientation.
	Range	1-3000
	Default	Printer configuration dependent
	Format	Integer

Set Point Size Command

Syntax	**%%IncludeFeature:pointsize*(default font size)***	
Purpose	Specifies the point size for scalable default font	
Notes	If the selected font is not scalable or if a bitmap font size is specified, this setting is ignored.	
Variable	***default font size***	
	Purpose	Specifies the floating point number for point size.
	Range	0.25 to 999.75 in 0.25 increments
	Default	Printer configuration dependent
	Format	Floating point number

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D

Notices

In This Chapter . . .

- Manual notices
- Laser safety
- FCC compliance
- Energy Star compliance
- International notices
- Colophon

Manual Notice

QMS, Inc. reserves the right to make changes to this manual and to the equipment described herein without notice. Considerable effort has been made to ensure that this manual is free of inaccuracies and omissions. **However, QMS, Inc. makes no warranty of any kind including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose with regard to this manual**. QMS, Inc. assumes no responsibility for, or liability for, errors contained in this manual or for incidental, special, or consequential damages arising out of the furnishing of this manual, or the use of this manual in operating the equipment, or in connection with the performance of the equipment when so operated.

Laser Safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the user documentation, may

cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1 Reorient or relocate the receiving antenna.

2 Increase the separation between the equipment and the receiver.

3 Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

4 Consult the dealer or an experienced radio/TV technician for help.

» **Note:** *A shielded cable is required to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.*

▲ **Caution***: Any modifications or changes to this product not expressly approved in writing by the manufacturer responsible for compliance to Federal Regulations could void the user's authority to operate this product within the Laws and Regulations of the Federal Communications Commission.*

WARNING! *To prevent electrical shock, do not remove any covers from your printer unless you are experienced in working with circuit boards and are following instructions for procedures described in QMS documentation.*

ACHTUNG! *Um elektrische Kurtzschlüsse zu vermeiden, entfernen Sie keine Gehaüseteile von Ihrem Drucker, wenn Sie keine Erfahrungen im Umgang mit elektrischen Bauteilen haben. Befolgen Sie die in der QMS Dokumentation beschriebenen Hinweise.*

Energy Star Compliance

The QMS 1060E Print System is compliant with US Environmental Protection Agency (EPA) Energy Star regulations.

Canadian Users Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques (de la classe B) prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Colophon

This manual was written and formatted in FrameMaker. Some illustrations were created in Adobe Illustrator and translated to WMF format in Transverter Pro; other illustrations were created directly in FrameMaker.

Typefaces chosen are Benguiat, Courier, and Helvetica.

The manual was printed in camera-ready form on a QMS printer.

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E

Configuration Menu

In This Chapter . . .

- Configuration menu charts

Introduction

This section provides the following menu charts:

- Configuration Menu

  Provides a menu chart of the main Configuration menu selections

- Communications Menu

  Provides a menu chart of the Communications menu.

- Emulations Menu

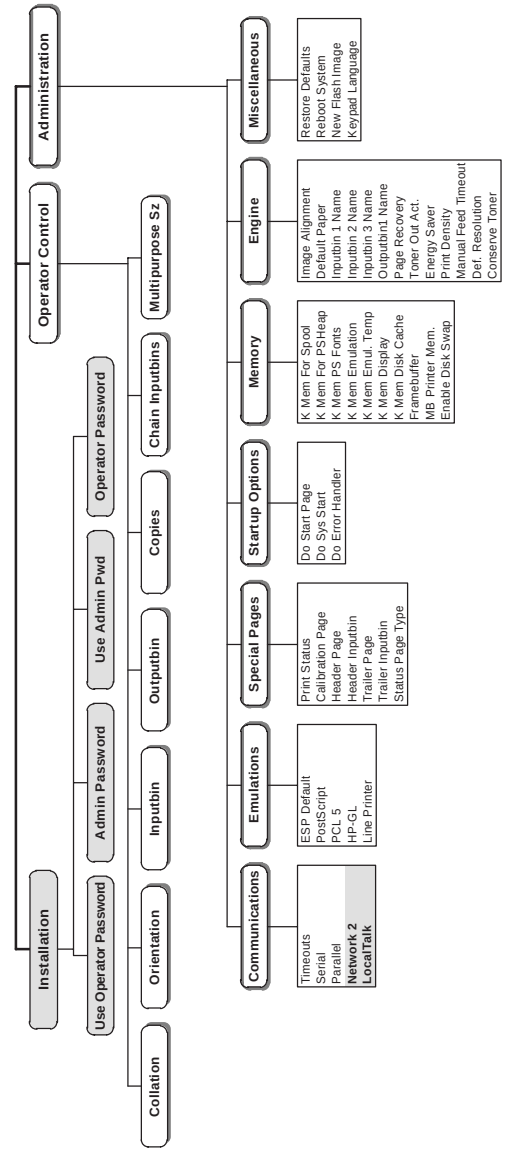
  Provides a menu chart of the Emulations menu.

Menu Chart Conventions

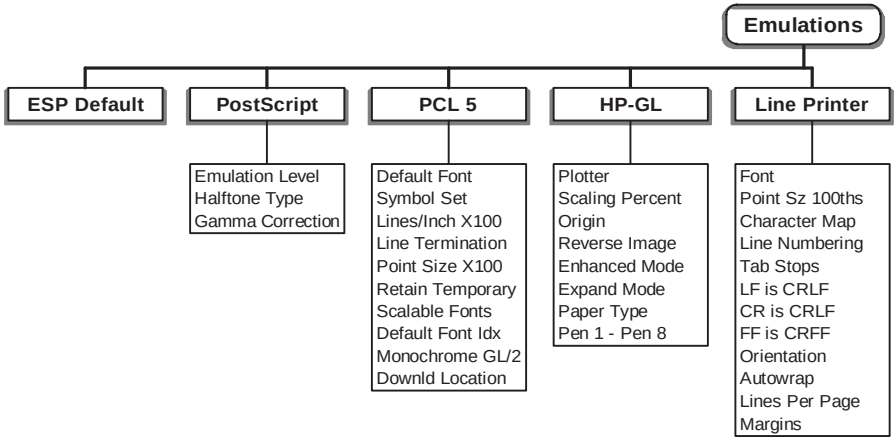
The following conventions are used in the menu charts:

- Some menu selections are highlighted in gray. These selections will only appear on your print system if the specified option is installed.
- These menu charts show only the top-level menus. See chapter 4, “Printer Configuration,” of the *Reference* guide for detailed information on a menu selection’s options.
- The Administration/Communications menu and the Administration/Emulations menu both have more menu selections than it is possible to fit on one page, so each of these menus have their own individual menu charts.

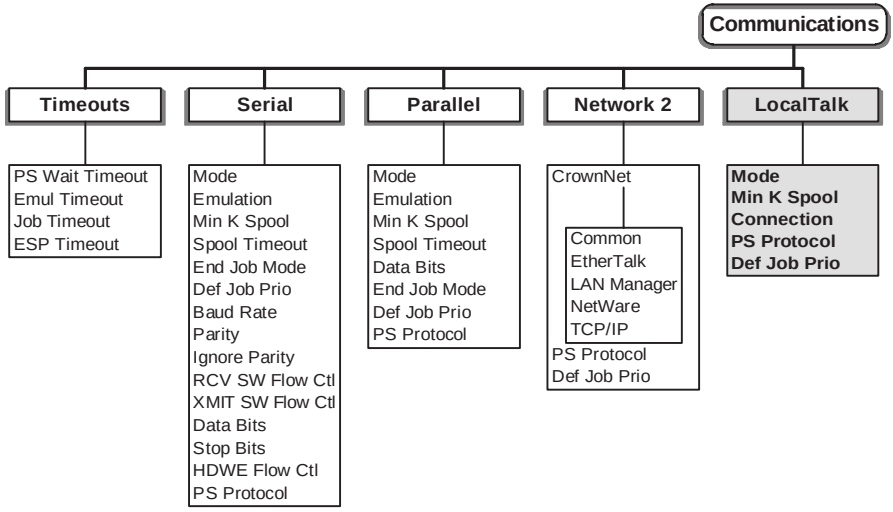
Configuration Menu



Administration/Emulations Menu



Administration/Communications Menu



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Glossary

Alphanumeric Value

A value consisting of alphabetic letters and/or numbers.

AppleTalk

A local area network communication protocol developed by Apple Computer that can be used by both Apple and non-Apple computers. It operates on LocalTalk or Ethernet (EtherTalk) cable. See also *Local Talk and Ethernet Network*.

Application

Any computer program designed to help people perform a certain type of work (for example, word processing, page layout, programming, graphics, and spreadsheets). Adobe Illustrator, Excel, and Word are applications.

ASCII

American Standard Code for Information Interchange. Developed by the American National Standards Institute (ANSI), the ASCII standard specifies a 7-bit digital code for each of the 96 displayable characters on a standard

computer keyboard. ASCII also specifies control characters. The full ASCII character set is 250+.

Baud or Baud Rate

The speed at which data is transferred between two devices, such as your printer and computer

Binary

A base2 number system written with the digits 0 or 1. See also *bit*.

Bit

Binary digit. The bit is the most fundamental unit of information that a computer can accept. It has two states called 1 (one) and 0 (zero), or on and off, and can be used to represent a yes/no type of statement. Groups of bits are used to represent more complex statements, such as characters. The most common grouping of bits is called a byte, which consists of 8 bits. See also *ASCII*, *byte*.

Bitmap

A grid composed of small dots used to define an image, line drawing, or character. See also *raster graphics and rasterization.*

Bitmapped Font

A bitmapped font is one in which each character is represented by a set of dot patterns. Each font size requires a different set of dot patterns.

Buffer

Storage space used to compensate for a difference in rate or sequence of data flow when transmitting data from one device to another.

Byte

A unit of information consisting of 8 bits, the equivalent of one character. See also *bit*.

Cancel Key

The control panel key that allows you to cancel or end a print job.

Card

See *font card* and *security card*.

CCITT

Comité Consulatif Internationale de Télégraphie et Téléphonie, part of the United Nations International Telecommunications Unit (ITU). CCITT Group 4 is the standardized protocol for data compression and for the encoding and transmission of images. This is the protocol used by fax machines.

Configuration

The process of specifying certain settings to allow your computer and printer to communicate properly. For example, interface selection (serial, parallel, or Etherenet) is part of printer configuration.

Connector

A coupler used to join a cable to a device or to another cable. Connectors are identified as male or female. A male connector has one or more exposed pins or prongs. A female connector has one or more receptacles designed to accept the pins on the male connector.

Connector Box

A piece of equipment consisting of a small box with a built-in cable that links the printer to the LocalTalk cable system.

Consumables

Supplies, such as paper, transparencies, and toner.

Controller

The software that controls the engine of a printer. The controller is the intelligence of the printer.

Crown

A multitasking operating system architecture developed by QMS and used in the QMS 1060E Print System.

CTS

Clear to Send. A signal sent from the printer to the host that it is ready to accept data.

Daughterboard

A printed circuit board that attaches to another circuit board (often the main system board, or motherboard) to provide additional functionality or performance.

Default

A printer control panel setting used in the absence of an application selection. See also *factory default.*

Download

Transfer information from one device to another.

dpi

Dots Per Inch, a measurement unit used to indicate printer resolution.

Driver

See *printer driver*.

Drum

The rotating cylinder in a laser printer that transfers the image to the page as it passes through the printer.

DTR/DSR

Data Terminal Ready/Data Set Ready. DTR/DSR is a hardware-controlled protocol. It controls the flow of data via signals on the DTR line, as opposed to XON/XOFF protocol, which is software controlled.

DTR/DSR

An acronym for data terminal ready and data signal received, a hardware-controlled protocol. It controls the flow of data via signals on the DTR/DSR line, as opposed to XON/XOFF protocol, which is software controlled.

Emulation

The ability of the printer to respond correctly to commands that are intended for a different type of printer. For example, when the printer is set for HP PCL emulation, it responds to the same commands (HP PCL) that a Hewlett-Packard LaserJet printer does. See also *emulation card*.

ESP

Emulation Sensing Processor. ESP technology uses a form of artificial intelligence to analyze incoming file data from any of the printer's interfaces, ESP technology, which works with most popular commercially available applications, selects the appropriate printer language from those installed on the printer and processes the print job, freeing the user from the need to change printer switch settings or send software commands to accommodate different printer languages.

Ethernet Network

A linear local area network developed by Xerox, Digital Equipment Corp., and Intel in 1976 and is now an industry standard.

ETX/ACK

End Of Text/Acknowledgment. ETX/ACK is an option for handling software flow control.

Factory Default

The printer settings that are programmed into the printer at the factory. These settings are used unless they are changed at the printer control panel or overridden by settings in an application, QMS Document Option Commands, or PS Executive Series Utilities. See also *default*.

Flash ROM

Quick loading, reprogrammable memory that holds information even when the printer's power is turned off. The 1060E Print System has Flash ROM available to hold system code and future system upgrades. The chief advantage of Flash ROM is that system upgrades can be loaded from a floppy disk without the necessity of swapping out expensive EPROMS or having to place a service call.

Fixed Spacing

Uniform horizontal spacing between characters and symbols in a font composed of characters of uniform width. For example, in fixed spacing an "i" has the same space allotment as a "w." Fonts with fixed spacing have a specific number of characters per inch, or pitch. See also *pitch* and *proportional spacing*.

Font

A complete character set in one typeface or style. Two types of fonts are available for your printer—downloaded and resident. See also *download*, *resident fonts*, *typeface*, and *typeface family*.

Font Card

A module the size of a credit card that contains fonts that can supplement the printer's internal, resident fonts to increase the variety of available typefaces. Font cards are inserted in the PCMCIA slot on the QMS 1060E Print System.

Fuser Assembly

An assembly that contains two heated rollers between which the paper passes after toner has been applied; the heated rollers bond the toner to the paper.

Gamma Correction

Gamma corrections allow you to sharpen the midrange contrast when scanning black and white images.

Gray Scale

Progressive shades from black to white which provide detail and contrast to printed images.

Handshake, Handshaking

A procedure, usually part of a communications protocol, to establish a data communications path.

Hard Disk

A secondary storage place for such items as downloaded fonts and emulations and for spooled data, thus providing virtual memory capabilities. You can add an internal IDE hard disk and up to three external hard disks to your QMS 1060E Print System.

Header Page

A special page printed before a print job that identifies the job and helps users sort the jobs in the printer’s output tray. Header pages contain the following information: printer name, selected interface, job identification, title, submitting computer, job owner, routing message, start time, application used, creation time, copyright date, version number, job submission

time, job start time, number of sheets printed, and printer product name/logo. The header page also lists any specified DOCs. See the *QMS Crown Document Option Commands* manual for complete information.

Heap

A portion of memory reserved for a program to use for temporary storage.

Host

The computer or network to which a printer is connected.

HP PCL

Hewlett-Packard Printer Control Language. The printer control language native to the HP Laser Jet Series II and III printers.

HP-GL

Hewlett-Packard Graphics Language. The programming language on which HP plotters are based.

IDE

Integrated Drive Electronics. The printer's optional IDE-SCSI board allows you to connect one internal IDE hard disk and up to three external SCSI hard disks, providing storage for fonts, emulations, and other files. See also *SCSI*.

Imageable Area

The maximum area of a sheet of media capable of being printed on. It is subject to both hardware limits (the physical page size and the margins required by the print engine) and software constraints (the amount of memory available for the full-page frame buffer).

Interface

The place where two devices are physically connected, allowing them to communicate.

Interface Cable

A special cable used to connect the printer to the computer so they can communicate.

Interface Card

Internal hardware used to link a workstation or printer physically to a LAN cable.

Interface Port

Your printer comes with three standard interface ports—serial, parallel, and Ethernet—located on the back panel. One optional network interface port is available. See also *interface card*.

Internal Fonts

Fonts permanently stored in the printer's memory; also called resident fonts.

Jam

A minor printer malfunction that occurs when paper or other print media gets stuck in the paper path.

Jam Recovery

The ability of QMS printers to resume a job as soon as the jam is cleared, first reprinting the jammed page and then continuing with the remainder of the job. With most other printers, if a paper jam occurs, you must remove the jammed paper and then reprint the entire job.

LAN

Local Area Network, a data communication system providing physical connectivity and shared resources for devices operating in the same general area.

Landscape Orientation

See *orientation*.

LCD

Liquid Crystal Display. The printer's LCD message window on the control panel provides status information and configuration menus.

LED

Light-emitting Diode. Four LEDs on the printer's control panel indicate printer status.

Local Area Network

See *LAN.*

Local Console

A console connected directly to the printer through a dedicated serial RS-232C port. The local console is used to configure and control the printer.

LocalTalk

Cabling for local area networks that use the AppleTalk protocol. See also *AppleTalk.*

Manual Feed

The process by which media is fed into the printer by hand (as opposed to letting the printer automatically pull media from a cassette or tray).

Media

See *print media*.

Memory

The space within your printer where information is stored while in active use. The term applies to internal storage space as opposed to external storage, such as disks or tapes. See also *RAM* and *ROM.*

Memory Client

One specific function of your printer, such as handling emulations, which has a block of memory dedicated to it. Each memory client controls certain features. When insufficient memory is allocated to a specific client, the features it controls may not be accessible.

Motherboard

The main circuit board containing the primary components of a computer system.

Network

A group of computers and other devices connected by some type of communication facility.

Network Administrator

The person in charge of operating a network. Also called a system administrator.

Next Key

The printer key that advances through the options in a menu.

Non-volatile Memory

Memory that is retained when the printer is turned off.

Null Modem Cable

A type of cable used for serial communication. This cable arranges the communication between two devices.

Octal

A number system with the base 8. The octal system uses 8 number symbols (0 through 7) and is used as a simple way to represent binary numbers.

Off Line

Not accepting data from the computer.

On Line

Accepting data from the computer.

Online/Offline Key

The control panel key used to switch the printer from on line to off line.

Orientation

The direction of print on the page. Printing across the narrow width of a page is called portrait orientation printing. Printing across the length of a page is called landscape orientation printing. Both terms are derived from art terminology—a portrait is usually vertical in format while a landscape is usually horizontal.

Page Description Language (PDL)

A programming language, such as PostScript, that is used to describe output to a printer or a computer monitor.

Paper Jam

See *jam*.

Paper Path

The path the paper follows in its journey through the printer; it begins at the paper cassette or tray pickup point and ends at the output tray.

Parallel Interface

A data transmission technique that sends each bit simultaneously over separate lines. (For this reason it is generally faster than a serial interface.)

It is normally used to send 1 byte (8 bits) at a time between computers and printers. You printer has a Centronics IEEE 488/1284 parallel interface port. See also *serial interface*.

Parity, Parity Check

The addition of overhead bits to ensure that the total number of 1s in a grouping of bits is either always even (for even parity) or always odd (for odd parity). This permits detection of single errors. It may be applied to characters, transmission blocks, or any convenient bit grouping.

PCL

See *HP PCL.*

PCMCIA

An acronym for Personal Computer Memory Card International Association, which sets industry guidelines for a standard 16-bit expansion socket that accepts credit-card size memory cards (such as fonts and emulations).

Peripheral Device

A hardware device connected to a computer (such as a printer) or to a printer (such as an external hard disk).

Permanent Soft Fonts

Permanent soft fonts are soft fonts downloaded into the printer's memory that remain resident there, even if the printer is reset, until the printer is turned off or the fonts are deleted by an application. (See *download*.)

Pitch

The number of characters printed per horizontal inch. For example, 12 pitch means that 12 characters are printed per horizontal inch. Pitch is applied only to fonts with fixed spacing.

Physical Memory

Memory that is actually present in the printer. The physical memory is equal to the amount of RAM installed in the printer.

Point Size

The height of a character or symbol in a font. There are 72 points per inch. This text is printed using a 10 point font.

Portrait Orientation

See *orientation.*

PostScript

A page description language trademarked by Adobe Systems Incorporated, which describes text, graphics, and page images to the printer. The PostScript Level 2 emulation, developed by QMS, is the native language of your printer's controller.

Previous Key

The printer key that scrolls backward through the entries within a menu.

Print Density

Print density refers to the relative darkness of print on the page. Very dense print appears totally black. Less dense print looks lighter, with solid-filled areas not totally covered. Print density can be adjusted in the printer configuration menu.

Print Engine

The non-intelligent portion of the printer, including the laser, print drum, and paper-feeding mechanism.

Print Media

Any material (such as paper and transparencies) used in the printer for printed output.

Print Quality

A general measure of the appearance and readability of a printed page. Criteria of print quality include the darkness, clarity, and sharpness of the type and graphics.

Print Queue

See *queue.*

Printed Circuit Board

A flat board made of plastic, fiberglass, or another nonconducting material on which chips and other electronic components are mounted.

Printer Driver

A printer driver is a file that enables the application to talk with the printer. Usually, the printer driver is installed within an application.

Printer Option

An accessory that may be purchased for the printer to expand its capabilities. These accessories include SIMMs, network interface cards, internal IDE hard disks, Intellifont SIMMs, external hard disks, and other options. See your QMS vendor for a complete list of options for your printer.

PROM

An acronym for Programmable Read Only Memory. A storage device that can be programmed by electrical pulses, a PROM does not lose its memory when the printer is powered off.

Protocol

A set of rules or standards designed to enable computers and other devices to connect to one another and to exchange information.

Queue

A list of documents waiting to be printed.

RAM

An acronym for Random Access Memory, the memory your printer uses to perform tasks. It can be written to and read from. Once a task is complete, the memory is free again to be used for another file. This memory is volatile, so if your printer loses power while a file is being sent, you must resend the file. The number and type of features you can run simultaneously on your printer depend on the amount of RAM available and how that RAM is distributed. RAM can be increased by adding SIMMs. See also *SIMM*.

RAM Disk

Also called a virtual disk. The RAM disk is an area of RAM that is used to simulate an additional hard disk. Data can be written to and read from a RAM disk more quickly than a hard disk, but a RAM disk loses any information stored on it when the printer's power is turned off. The frame buffer and spooling buffer are RAM disk clients. See also *RAM*.

Raster Graphics

The system of forming graphics using a bitmap, or grid of small dots, is called raster graphics. The term "raster" denotes the Cartesian grid system in which the dots are arranged. Bitmaps can define images, shapes, or characters created with a specific number of dots per inch. See also *bitmap*.

Rasterization

The conversion of vector graphics (images described mathematically as points connected by straight lines) to equivalent images composed of pixel patterns that can be stored and manipulated as sets of bits.

Remote Console

A console connected to the printer via a network. When a remote console connection is established, the system administrator may configure the printer through the console as well as through the printer control panel.

Resident

Permanently stored in the printer's memory.

Resident Fonts

Fonts permanently stored in the printer's memory; also called internal fonts.

Resolution

A measurement of the dots per inch (dpi) in output material, either printed or visual, as in a high-resolution monitor. Your printer features offers a choice of resolutions.

RISC

Reduced Instruction Set Computing. A microprocessor design that focuses on rapid and efficient processing of a relatively small set of instructions.

ROM

An acronym for Read Only Memory. ROM is a more stable kind of memory than RAM. Information stored in ROM is retained and can be retrieved each time the machine is activated.

RTS

Request To Send. RTS is a signal from the host to the printer indicating it is ready to send data.

Scalable Font

A scalable font is one in which each character's dot pattern (bitmap) is generated from a mathematical representation (or outline) of the character. Scalable fonts eliminate the need to store many different font sizes.

Screen

The pattern in which dots or lines are placed on a page to create colors or levels of gray.

Screen Angle

The angle at which a screen is printed. See also *screen*.

Screen Font

A font designed for display on a computer monitor. Screen fonts usually have corresponding printer fonts.

SCSI

An acronym for small computer system interface. The printer's optional IDE board allows you to connect an internal IDE hard disk and up to three external SCSI hard disks or four external SCSI hard disks, providing storage for fonts, emulations, and other files. See also *IDE*.

Security Card

A module the size of a credit card that allows you to set passwords for the Operator Control and Administration menus. When a security card is inserted into the PCMCIA slot, the Installation menu appears in the configuration menu.

Select Key

The control panel key used to access a menu or to choose a displayed selection or option.

Serial

A data transmission technique that sends each bit sequentially over a single line. A serial interface is a connection between a computer and a printer in which information is transmitted sequentially.

SIMM

Single In-line Memory Module. A small circuit board designed to accommodate surface-mount memory chips. SIMMs use less board space and are more compact than more conventional memory-mounting hardware.

SIO

Simultaneous Interface Operation. The capability of printing to all three of the printer's concurrently active ports rather than being restricted to one. See also *concurrent interfaces*.

Soft Fonts

Fonts created or stored on disk. They can be transferred to the printer's memory and remain available for use until the printer is turned off. See also *download*.

Spool

Simultaneous Print Operations On Line. Spooling is temporary storage to hold print jobs until the printer is available to process them.

Start-up Page

A page generated automatically when you turn on the printer (unless you have disabled it). It gives limited information on the printer, including name, pages printed, current interface settings, and amount of RAM available.

Status Page Key

The control panel key that prints one or several pages of printer status and configuration information, including available paper sizes and installed fonts.

Storage

A device in or on which information can be kept. There are three main types of storage, ROM, RAM, and hard disks. ROM stores read-only data, RAM represents temporary storage, and hard disks hold information on a more permanent basis. See also *hard disk*, *RAM*, *ROM*, *spool*.

System Administrator

The person in charge of managing a network; also called a network administrator.

TCP/IP

Transmission Control Protocol/Internet Protocol, a software protocol developed by the Department of Defense for communication between computers.

Timeout

Expiration of a predefined interval that triggers some action. For example, in a 30-second, no-activity timeout, a disconnection is triggered by a 30-second span without any data activity. Timeout also refers to the length or existence of such an interval.

Token-Ring Network

A ring (or closed loop) local area network that uses token passing for data access.

Toner

A dry, powdered substance capable of being attracted to electrically charged areas on a photosensitive revolving drum. The printer's EP (electrophotographic) toner cartridge holds the toner. The toner is first attracted to this charged area, then attracted to the negatively charged paper. The toner is melted (or fused) in place by the fuser assembly.

Toner Cartridge

A disposable cartridge containing dry toner and a print drum.

Trailer Page

A special page printed after a print job that identifies the print job and helps users sort the print jobs in the printer's output tray. Trailer pages contain the following information: printer name, selected interface, job identification, title, submitting computer, job owner, routing message, start time/date, application used, creation time/date, copyright date, version number, job submission time, job start time, job finish time, number of sheets printed, and printer product name/logo. The trailer page also lists any errors generated by the printer while processing or printing your document. See the *QMS Crown Document Option Commands* manual for complete information.

Transformer Box

Also known as a connector box. This piece of equipment consists of a small box with a built-in cable that links the printer to a LocalTalk cable.

Transparency

A type of media, also known as OHP (overhead projection) film or foil, commonly used for presentations.

Typeface

The basic printed design of characters in a font. For instance, Courier, Times, and ITC Garamond typefaces each print characters of different designs. See also *font* and *typeface family*.

Typeface Family

A group of similar typefaces, like Times Roman, **Times Bold**, *Times Italic*, and ***Times Bold Italic***. See also *font and typeface*.

Utility

A program that performs a specific function of computer system management, such as maintaining disks and files or controlling a peripheral device.

Virtual Memory

Virtual memory extends the effective size of the printer's memory by using a disk file or swap file to simulate additional memory space. It enables the hard disk to accept data swapped from RAM, temporarily freeing the RAM for other tasks.

Volatile Memory

Memory that is cleared when the printer is turned off. Most RAM is volatile.

XON/XOFF

Control characters used for flow control in data transmission.

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